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AND

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THE BRITISH ASSOCIATION.

SEVENTH MEETING: LIVERPOOL.

As this is the seventh year of our apprenticeship to the British Association, we shall commence with Journey-work, and supply our readers with a general view of the whole; as well as with detailed Reports of those proceedings which, either from their novelty or importance, are most worthy of record. A minute notice of every thing would be a tiresome repetition of well-known facts — a discovery of *mares' nests*, which could neither edify the world of science nor inform the ordinary observer. Selection, amid the bustle and confusion of so many discussions going on at the same time, is the greatest difficulty; but even omissions would, in our opinion, be better than the indiscriminate collection of the entire heterogeneous mass, blending trifles with valuable communications, pseudo with original inventions, and the fancies of ignorance and whims of vanity with the well-founded speculations of enlightened minds and the mighty truths of comprehensive intelligence.

It is no disparagement to say, that such a mixture is inseparable from such a meeting; and that neither wisdom nor care can guard against the intrusion of a certain quantity of the useless and the foolish into the bubbling caldron of physics, chemistry, geology, statistics, mechanics, dinners, sights, soirées, and entertainments. It is well that the predominance of good is so obvious, as to render these re-unions not only delightful as regards social intercourse, but extremely serviceable in the diffusion of scientific knowledge. The localities stimulated and benefited by them, and the interchange of national courtesies with foreigners (though more limited than could be wished), are excellent features in the plan, and would alone recommend it to the success and popularity which has grown with its growth and strengthened with its age.

As we are not disposed to confine ourselves exactly within the dry rules of reporting, we hope our readers will pardon our beginning with some reflections suggested by

THE RAILROAD.

The bridge in the Vision of Mirza is not so close a picture of human life as the transit by a railroad.

A power unseen starts the traveller on his journey, and onward he proceeds, with a fearful and unceasing rapidity. The beauties of nature are spread on his right hand and on his left, and he catches glimpses of them as he passes along; but there is no time to pluck the flower, to taste the refreshing stream, to enjoy the delicious landscape.

The magnificent palace rises on the view. He sees its colonnades and towers, and knows that grandeur is revelling there, but is hurried on, even before he can admire the fleeting pageant. On the other side stands the lowly cabin, with its laborious occupants; but they are detained no longer on the course than the splendid mansion with its listless inmates.

There is a beautiful creature on the path beside! One glance of love is interchanged, and in a few moments you are separated for ever! The heart yearns to prolong the happiness, but it may not be: the journey is never-resting movement, never-stopping change.

Every object in turn becomes a vision, and nothing but the onward flight is a reality.

Here and there the passengers are dropped on the road — at the first station of infancy; the second, of youth; the third, mid-route: while some are borne further, to the end. How small the difference between their various journeys!

Fatigue usurps the dominion over sense; the eye tires of gazing, the ear of listening, the mind of receiving impressions; and the wish arises, that the vapour-fed and vapour-clouded peregrination were done.

Scenes of pleasure, scenes of sorrow, the distant prospect and the nearest objects, vanish, with hardly a momentary regard; and still, still you are hurried on, with increasing speed, for now all is the "declination" of art and nature.

There is a jar, a lock, a crash, which seems to dislocate the machine! A dimness creeps over the sunny world! — it grows darker and darker, and the shadows of death are upon you. The drag-chain of Fate has dragged you into the murky tunnel, and the close is the grave!

But, adieu to allegory! What has the Brummagem Railway to do with such suggestions? It is enough to have traversed the distance — ninety-seven miles in four hours; and, though about ten minutes of dark tunnelling were superadded, surely there was a resurrection into the daylight at Liverpool; and an omnibus to the Adelphi Hotel soon convinced us that we were alive and well in the breathing world: nor did a capital dinner relish the less from our having been so long in previous *training*. And, talking of dinners, it may be as well to mention here, that the turtle, which was *not* at Bristol last year, seems at this period to abound in its more enterprising competitor; and, we have little doubt, will afford considerable gratification to Section D, Natural History, whatever Section E (Medicine, to wit) may say to it.

On Saturday, the first business of the Association was the meeting of the General Committee, the parliament of the meetings. It was held in the handsome library of the Athenæum, which has been placed at their disposal for that purpose by the subscribers of the institution, with a promptitude which does them infinite credit; and from a member who attended, we have been favoured with the following sketch of the proceedings:—

The chair was taken at twelve o'clock by the Marquess of Northampton, acting in the absence of Lord Lansdowne, as president for the year.

The object of this meeting was, as on all former years, to arrange, by preliminary proceedings, the manner in which business was to be transacted during the week; and for this purpose, one of the two general secretaries read the intended programme, setting forth, first, the arrangements which the local committee, with the assistance and co-operation of their fellow-townsmen, had made for the accommodation of the members on their arrival at Liverpool; and, secondly, the order in which the proceedings of the Association would be conducted during the ensuing week.

The reading of this programme occupied considerable time, during which no observation was elicited. It was adopted, finally, by the members present, who were very numerous, amounting to nearly a hundred.

The programme was ordered to be printed, and circulated among the members of the Association, without loss of time. The Secretary then adverted to the usual Report of the Council of the Association residing in London, which was always presented at this meeting, and which, in the present instance, would be read to the members by Mr. Yates, in the name of the council. In alluding to the said report, Professor Phillips mentioned, that the council had deemed it necessary to embody in that document a number of recommendations, which, he trusted, would be adopted, as there was no doubt they would be found to be *improvements*. He left it to the honourable member, Mr. Yates, to explain and support the said recommendations; but he himself could not forbear stating, in regard to one of them, that it was absolutely necessary, and was called for by the extreme difficulty which the secretaries had hitherto experienced in transacting the many, heavy, and multifarious duties, that devolved on them at the last and concluding general meeting. On that occasion it has been customary, besides reading the reports of the sections, &c., to proceed to the consideration of all the recommendations for setting inquiries on foot, and for voting the necessary sum of money towards those inquiries, sent in by the Committee of Recommendation. As if these two great and important branches of duty had not been sufficient for the two general secretaries to attend to, a third was imposed on them, which generally gave rise to infinite discussion, and arose out of the appointment of the place of meeting for the ensuing year, and the nomination of the new president, vice-president, and secretaries, by the general committee.

The consequence of so much occupation at this general meeting was, that the thing had always been done imperfectly, or in such a hurried manner that he (Professor P.), for one, would not undertake to assert, that what he had written down in the minutes on the day in question was always correct, or to be depended upon as such. All the members of the council, who had given their mature consideration to this question, had come, like himself, to the conclusion, that a change was positively called for; as he could not, nor could any secretary, under circumstances of so much pressure, perform duties so onerous in a satisfactory manner. The change which he should recommend was, to divide the business to be transacted at the conclusion of the week of meeting, so that the appointment of the place of meeting, and the nomination of the officers, should take place on the Saturday as hitherto; but that the consideration of the recommendations for grants of money from the sections, should be deferred to the following Monday.

Professor Whewell corroborated what had fallen from Mr. Phillips, and testified to the

great attention bestowed on the question by the council, who had consequently recommended the adoption of the plan alluded to by the honourable secretary. The noble chairman, and one or two other members, seemed to concur in the plan; and the motion for its adoption was about to be put, when Dr. Granville rose and pointed out the necessity of not legislating so precipitately on a question involving so great a modification and change of the original constitution of the Association. He would only call the attention of the meeting to one striking, glaring, and, in his opinion, fatal objection to the plan proposed—that it extended the time of meeting by two days, one of which, being a Sunday, and consequently a *dies non*, could be of no service for the purpose of the Association; although, in conjunction with another day (Monday), it would prove of the utmost inconvenience to two-thirds of the members, who were either professional men, like himself, or otherwise engaged in business, and unable to absent themselves for a longer period than a week from their homes. The effect of such a measure would inevitably be that of restricting to a comparatively small portion of the members present, who could afford to remain behind for that object alone, after the real labours of the Association had terminated, and after every one else had left the place, the voting away of the money of the Society, and its application for particular requisites. These were two of the most important acts of deliberation which devolved on, and especially appertained to, the British Association. Besides, had the council reflected that there were *other* parties to be consulted before such a change could possibly be proposed and adopted by the members of the general committee, supposing, even, that they were prepared to pass over the formidable objection just stated? Were the council also prepared to say, that it would always be convenient to those public bodies, which liberally gave the Association the use of their rooms, threw open all their institutions, suspended their rules of restriction, and afforded often very splendid hospitality to their guests, to prolong all those acts of kindness and courtesy for two days beyond a week? And unless a certainty existed on that point, he (Dr. Granville) contended that the general committee were not in a condition to come to a resolution on the recommendation of the council, notwithstanding the emphatical defence of it by the learned secretary. For both these reasons, Dr. Granville observed that, being unwilling to meet the council by any counter resolution or amendment, which would come with an ill grace from him, he hoped that the original resolution would not be persevered in. If the business of the concluding Saturday meeting were found to be too heavy for the secretaries, why, let it be divided—let a part of it be done on a previous day.

Mr. Murchison, the other general secretary, who has succeeded the Rev. Mr. Harcourt, in consequence of that gentleman's lamented resignation on account of ill health, admitted that Dr. Granville's argument had great weight, and that the view he had therein taken had not occurred to the council, though he apprehended that it must now be entertained. He therefore suggested that the part of the business of the Saturday which related to the appointment of the place of meeting and the nomination of the officers, should take place on the Thursday, and that the recommendation for the grant of money should, as hitherto, be taken into consideration on Saturday; thus leaving things, as far as the duration of the meeting of the Association was concerned, in the same state as before. This suggestion having been agreed to, a resolution was framed and passed to that effect.

The next recommendation of the council, read by Dr. Yates, involved likewise a change, or changes, which gave rise to considerable and lengthened discussion. It related to the qualifications which would hereafter be required of a member of the Association to become a member of the general committee. At present the rule stands—

"*General Committee.*—The general committee shall sit during the time of the meeting, or longer, to transact the business of the Association. It shall consist of all members present, who have communicated any scientific paper to a philosophical society, which paper has been printed in its transactions, or with its concurrence.

"Members of philosophical institutions, being members of this Association, who may be sent as deputies to any meeting of the Association, shall be members of the committee for that meeting, the number being limited to two from each institution."

This rule and the next are abrogated, and others substituted instead, some of which did not appear to meet universal approbation. The most important point of discussion, however, was the propriety of admitting, as members of the general committee, and as a matter of right—as in the case of several other scientific non-incorporated societies, which had been selected by the council, and adopted—the members of the Statistical Society of London, who had written and published papers in the transactions of that society. Professor Whewell strenuously opposed the proposition, and contended that the Statistical Society had no claim to such a privilege, inasmuch as statistics were scarcely an object of science, and that the committee might as well admit grammarians, philologists, and politicians, all of which are, by the rules of the Association, excluded from becoming *ex officio* members of the general committee. He entertained a strong opinion on the subject, and should certainly take the sense of the meeting upon the question if it were proposed.

Colonel Sykes made a few observations, tending to prove that statistics had a right to the privileges he claimed for them, and should insist on his motion, viz. that the Statistical Society of London should be added to the council-list of the favoured societies.

Another member said, that if Colonel Sykes carried his motion, *he* should move that the Statistical Society of Manchester should be also added.

Dr. Granville expressed his great surprise at the sentiments uttered by the learned professor of Cambridge, respecting the alleged non-scientific nature of statistics, and the absence of all claim on the part of them to be considered as a science by the Association, when their very name actually stood before him, printed in large letters, in the programme just adopted, and was to be found in the book of contributions of the Association, as part and parcel of that Society; as, in fact, constituting one of its sections. Now, if there was a section for Statistics, as there was one for Astronomy and Mathematics, and one for the Medical Sciences; and if these latter were admitted to the honour of being represented in the general committee by members taken from societies purely devoted to these branches of knowledge, he, for one (Dr. Granville), could not perceive by what operation of reasoning the learned professor came to the conclusion that statistics should, and ought, not to be so represented. It was too late to revert, as the learned professor had done, to an old alleged fact, that the section of Statistics had got inserted by a rule usual among the other sections; that it was an illegitimate portion of the Association; that it was, in fact, what the poor-law commissioners would call a *bastardy case*. The section was there; it was fully acknowledged, and was, therefore, fully entitled to the immunities and privileges of the other sections. With regard to the argument that statistics was not strictly of the domain of sciences; that it merely bordered on that domain, but was not of it, Dr. Granville felt convinced that the learned professor would come to a different conclusion, if he would take the trouble of perusing the many valuable works that had in recent years appeared on the Continent, on "Physical and on Medical *Statistics*." He agreed with the professor, that all that was purely literary or political in statistics, had no business with the purport of the Association; and he, for one, would agree to restrict the privilege of representation in the general committee to those members of the Statistical Society, either of London or of Manchester, or of both, who had published papers on "Physical Statistics" only. It was a pity, indeed, that the title of *Physical Statistics* had not been assigned to the section; for then the Association would have had it in their power to reject, most legitimately, all memoirs on moral and political statistics, such as concerned education, for instance, crime, imprisonment, &c. He hoped, therefore, that a proper concession, with a suitable distinction of grades, would be made in favour of the gallant colonel's motion.

Ultimately, Professor Whewell agreed to propose himself, that the superior office-bearer alone of the Statistical Societies of London and Manchester should be *ex-officio* members of the general committee; a motion which was seconded by Dr. Granville, and carried.

The remainder of the recommendations of the council were adopted *sub silentio, nem. dis.* The meeting then proceeded, *seriatim*, to name the president, two, and in some instances three, vice-presidents, with two secretaries, of each section; and the meeting adjourned at four o'clock.

The idea of altogether excluding literature from science is whimsical enough; but Science has always some crotchets which common-sense people cannot comprehend. According to some of these authorities, "*philosophy*" may consist in dissecting a nettle-leaf, or skinning a flea; but the investigations of Plato were not philosophy; nor would Plato himself have been entitled to a seat in the general committee!! These fantastic distinctions have, we regret to notice, estranged men of high intellectual powers from the Association; but we think they ought rather to disregard them, and especially if they had opportunities of observing how inconvenient any thing of a literary caste or character must be to a considerable number of associates who have no notion whatever of the matter.

On Saturday, the mayor gave a grand dinner-entertainment to many eminent persons whose arrival had been ascertained; and in the evening the fine suite of rooms were opened to the members generally, and ladies.

On Monday, the influx of strangers continued without intermission; and their reception, furnishing cards, lodgings, &c. &c., gave ample employment to the gentlemen who had undertaken these necessary duties. In the meantime, at 10 o'clock, the sectional committees met, elected their officers, and arranged the

order of business. The sections, accordingly met soon after eleven, and under the following auspices.

Section A.—*Mathematics and Physics.*
Mechanics' Institute.

President—Sir David Brewster; *Vice-Presidents*—Mr. Lubbock, Mr. Baily, Mr. Peacock; *Secretaries*—Rev. Professor Powell, Professor Stevelly, Mr. W. S. Harris; *Members of Committee*—Rev. Dr. Robinson, Sir W. Hamilton, Professor Christie, Rev. W. Whewell, Professor Lloyd, Professor De la Rive, Professor Plateau, Professor Henry, Dr. Faraday, F.R.S., Professor Wheatstone, Dr. Ritchie, Major Sabine, Rev. Dr. Hincks, Mr. Russell, Professor Moll, Captain Ross, R. W. Fox, Professor M'Cullagh, Professor Challis.

Section B.—*Chemistry*, Mechanics' Institute.

President—Dr. Faraday, F.R.S.; *Vice-Presidents*—Professor Daniell, Professor Graham, Dr. Apjohn; *Secretaries*—Professor Johnston, Dr. Reynolds, Professor Miller; *Members of Committee*—Monsieur De la Rive, Dr. Thomas Thomson, M. Gay Lussac, M. Liebig, Dr. Yellowly, Professor Cumming, Mr. Richard Phillips, Mr. W. Herepath, Professor Edmund Davy, Dr. Andrews, Professor Clark, Mr. W. Lucas, Mr. H. H. Watson, Dr. Kane, Mr. Mackintosh, Dr. R. D. Thomson, Mr. Thomas Thomson, jun., Mr. Charles Tennant, Mr. Crossall, Mr. Robert Mallett, Mr. Walter Crum, Dr. Ingles.

Section C.—*Geology and Geography*,
Mechanics' Institute.

President—Rev. Professor Sedgwick (for Geography, G. B. Greenough); *Vice-Presidents*—Leonard Horner, Lord Cole, M.P., H.T. De la Beche, F.R.S.; *Secretaries*—Capt. Portlock, R. Hutton, M.P. (for Geography, Capt. H. M. Denham, R.N.); *Members of Committee*—James Bryce, Sir Philip Grey Egerton, W. J. Henwood, James M'Adam, Major Sabine, H. E. Strickland, W. West, M.D., H. T. M. Witham, Rev. M. Dwyer, of Liverpool, W. B. Clarke, Richd. Griffith, B. Ibbetson, Col. Silvertop, R. J. Murchison, T. S. Traill, M.D., Rev. James Yates, Professor Phillips, Major Shadwell, Chester.

Section D.—*Natural History*,
Royal Institution.

President—W. Sharpe Macleay, F.L.S.; *Vice-Presidents*—Dr. Richardson, Professor Graham, Professor Lindley; *Secretaries*—C. C. Babington, F.L.S., W. Swainson, F.L.S., Rev. L. Jenyns, F.L.S.; *Members of Committee*—Thomas Hinks, D.D., N. A. Vigors, F.L.S., Rev. F. W. Hope, F.L.S., Pat. Neill, LL.D., Professor J. S. Henslow, T. S. Traill, M.D., Earl of Derby, Rev. W. Hinks, F.L.S., John Curtis, F.L.S., P. B. Duncan, F.L.S., J. E. Gray, F.R.S., Charles S. Parker, Rev. J. Yates, J. E. Bowman, T. Eyton, J. P. Selby, C. Horsfall, B. Bail, S. W. Dillwyn, J. N. Walker, A. H. Halliday, J. T. Mackay, Captain James Ross, Sir W. Jardine, R. Harrison, Mr. Tinney, H. Sandbach, J. Salisbury, Mr. Green, Dr. Duncan, F. Archer, G. Cook.

Section E.—*Medical Science.*

President—Professor William Clark, M.D.; *Vice-Presidents*—J. Carson, M.D. F.R.S., P. M. Roget, M.D. Sec. R.S., R. Bickersteth, Esq., Professor R. T. Evanson, M.D. M.R.I.A.; *Secretaries*—J. Carson, jun. M.D., J. R. W. Vose, M.D.; *Members of Committee*—Neill Arnott, M.D. F.R.S., R. Bright, M.D. F.R.S., Hugh Carlisle, M.D., J. Copland, M.D. F.R.S., Professor R. T. Evanson, M.D. M.R.I.A., Richard Formby, M.D., Augustus B. Granville, M.D. F.R.S., John Houston, M.D. M.R.I.A., James Johnson, M.D., James Macartney, M.D. F.R.S., Charles Herbert Orpen, M.D., William Henry Porter, Esq., Charles B. Williams, M.D. F.R.S., John Yelloly, M.D. F.R.S.

Section F.—*Statistics*, Savings' Bank.

President—Lord Sandon, M.P.; *Vice-Presidents*—Col. Sykes, Mr. G. R. Porter, Mr. J. Heywood; *Secretaries*—Mr. W. R. Greg, Dr. W. C. Taylor, Mr. W. Langton; *Members of Committee*—Dr. Jerrard, Mr. Hovenden, Mr. Fripp, Dr. Carpenter, Mr. H. Romilly, Col. Briggs, Mr. Corrie, W. C. Taylor, LL.D., W. Wyse, M.P., Mr. Llaney, M.P., Mr. Urquhart, Dr. Kay, Mr. Tuffnell, Mr. Chadwick, Mr. S. J. Loyd, Mr. Simpson.

Section G.—*Mechanics*, Mechanics' Institute.

President—Rev. T. R. Robinson, D.D. F.R.S.; *Vice-Presidents*—Dionysius Lardner, LL.D. F.R.S., Professor Wheatstone, London, Professor Willis, Cambridge; *Secretaries*—William Ritchie, LL.D. F.R.S., Thomas Webster, Sec. I. C. E., Charles Vignolles, C.E.; *Members of Committee*—John Scott Russell, F.R.S.E., John Taylor, F.R.S., John Robison, F.R.S.E., Davies Gilbert, F.R.S., Dr. Traill, F.R.S.E., Geo. Rennie, F.R.S., Rev. John Blackburne, Pres. Sheffield Phil. Soc.; *Associates*—John Isaac Hawkins, C.E., William Fairbairn, Peter Clare, Geo. Forrester, Edmund Bury, William Fawcett, Henry Booth, Hardman Earle, Joseph Locke, David Hodgson.

Thus constituted, the various sections proceeded to hold their sittings; and though an exceedingly wet forenoon threw somewhat of a damp over the *locomotive*, the arrangements were all in such good order, that even the usual confusion of beginning operations so various and complicated, was entirely avoided. The Mechanics' Institute had been rapidly restored from the effects of the recent disastrous fire, and excellent accommodations (though the numbers appear to form a bustle in the lobbies) made for the four Sections located under its roof; as well as for rooms where the ordinary tickets were issued, and other useful purposes connected with the assembly. The other three Sections were also very conveniently lodged within very short distances from these head quarters.

The Geological and Natural History Sections had galleries for ladies; and both were graced by the beauty of Liverpool, with its Lancashire witches, and of the strangers who were now their visitors.

In our report for the present week, we must, to a certain extent, be guided by circumstances; for, if possible, it would be unadvisable to go on with a regular series of the papers and discussions. We shall select such as are most suitable for local and popular purposes—such as can be most clearly explained—and reserve others for the very brief notices which their nature demands, or the more perfect illustration which time may enable us to supply.

Section A commenced with a paper by Professor Powell, on the dispersion of light, in which he stated the results obtained from an examination of different highly refractive media, and the concurrence of these results with the theory of Mr. Kelland.

After which was read a paper by Col. Gold, on the possibility of establishing regular telegraphic communications by night and day. It touched upon the practicability of communicating by sounds; which mode was objectionable on account of the alarm to which it might give rise. Communications by means of projectiles were liable to still more serious objections. The most eligible mode which suggested itself was that of intercommunication by means of electricity. Several calculations were entered into; but we fear that they were only suggested by the writer's not being aware of old and much more extensive experiments having led to certain results of far greater application.

Mr. Cunningham sent a communication on the construction of magnets. It recommended the formation by casting of the magnets into the ordinary horse-shoe form, previously to their being converted into steel. Mr. Christie suggested that such communications as the one just read should contain some numerical results on the subject. The importance of the present subject rendered this the more imperative, inasmuch as government was now making inquiries as to the best material for the construction of magnetic needles. Mr. Holden observed, that, in his experience, the best refined steel took the most strongly the magnetic power, and retained it longest. The chairman observed, that drawn steel-wire, in his opinion, took most strongly and permanently the magnetic influence. Another gentleman informed the company that he had actually found by experiment, that cast iron did not retain its magnetic influence as long as steel.

Mr. Lubbock proceeded to give an account of the manner in which the money placed at his disposal, for the purpose of making observations on the tides, had been expended, and to detail the results which were obtained. It appeared, that the fluctuations in the tides were not entirely owing to the barometrical variations, though these, with other accidental circumstances, must necessarily produce some disturbance. In every case, the results obtained were carefully compared with the theories which have recently obtained popular credit. Various calculations were entered into to illustrate the theory which Mr. Lubbock had adopted, the formulæ of which would require half a volume of philosophical transactions to lay down and explain. The observations made corresponded very exactly with the theory of Bernouilli, the actual results coinciding with a degree of exactness approximating to absolute identity. The curves exhibited on the diagrams which were produced before the meeting, in very few cases shewed any considerable variations; and those between the observations made during the year at Liverpool and London, though accompanied by phenomena not yet accounted for, also coincided nearly in other respects. Mr. Lubbock spoke in terms of high commendation of the accuracy with which Mr. Russell had conducted the experiments at Liverpool, and had discussed the observations of 19 years at the London Docks. The variation between Liverpool and London for the moon's parallax amounted (as we understood him) to about four minutes; and this was so certain, from the vast number of observations made, that the cause was well deserving of inquiry.

The diagrams exhibited fully demonstrated the report; and we have only to regret that a subject of such vast interest cannot be even faintly explained in a popular manner. The main conclusion is, making allowances for the casual disturbances of atmospherical pressure in the experiments, that Bernouilli's equilibrium theory nearly satisfies the phenomena in every respect. Mr. Lubbock concluded by alluding to the irregularities produced by atmospheric pressure on the height of the tides, which rendered it necessary to consider the barometrical indications, in making any calculations from the average of observations.

Mr. Whewell made several remarks in corroboration of the theory of Mr. Lubbock, and likewise several interesting observations on the singular phenomena exhibited in the progress of the diurnal tide-wave on the coasts and in the rivers of England.

A member dwelt on the utility of devoting the funds of the Association for the purpose of collecting such a mass of information as that furnished to Mr. Lubbock, and on the advantage of co-operation in carrying on such investigations.

Professor Staveley said, that the captain of the vessel in which he came from Ireland observed that the diurnal wave was frequently augmented by the reflux of the semi-diurnal wave; and, in some instances, the effect produced was so considerable, as to cause a difference of several feet in the height of the tide, in places within a very short distance of each other.

Professor Christie noticed, that in several of the ports on the coast of England there were actually two high waters, produced, it was suggested, by the arrival of a tidal wave from two different directions. The instances of Southampton and Poole were mentioned, in the former of which there are two periods of high water at each tide, within an interval of an hour and a half; and, in the latter case, the same phenomena take place within an interval of three hours.

The Chairman suggested that the phenomena might be accounted for by supposing the ebb tide to be arrested by the influx of the flood tide, and thus augment the tidal wave.

Mr. Whewell next proceeded to read a communication on the subject of his anemometer, exhibited at two preceding meetings. His

object in bringing the subject before the Section at present was to shew the results of the observations made with it at Cambridge, and elsewhere. Mr. Whewell also alluded to another instrument, constructed by Mr. Osler, which had been constructed for determining the whole course of the wind, and its intensity at any particular moment.

Mr. Osler proceeded to describe the instrument constructed by him, and to detail the results obtained during the last year. This instrument also shewed the quantity of rain which fell during the same period, and the length of time which it occupied in falling. It also shewed the state of the thermometer; thus giving a comparative view of all the changes which take place in the atmosphere.

Mr. Whewell complimented Mr. Osler on the perfection of the instrument constructed by him, especially as a registering instrument of all the atmospherical phenomena.

Section B. In this Section, little was done; and the committee did not seem to be prepared with papers to last above an hour.

Professor Johnston opened the proceedings, by stating that it was customary, in the first place, for those individuals who had undertaken researches at the suggestion of the Association, to communicate the result of their labours during the past year. Owing, however, to the lamented death of Dr. Henry, the serious indisposition of Dr. Dalton, as well as the absence of Mr. Faraday, to whom these duties had been confided, no additional information was obtained.

Mr. Crane, of Yriscedwyn Iron-works, near Swansea, read a paper on his successful introduction of anthracite coal, by the combination of heated air, to the purpose of smelting iron ore. The reduction of the quantity of fuel expended to less than a third of that before required of the bituminous kinds for the production of the ton of pig-iron—the increase of from 40 to 50 per cent upon the former make by the process—and the greatly increased strength of the metal, when compared with that previously obtained by him from the native ores of the South Welsh basin, with the use of the coke of the bituminous veins and cold blast, were the leading points of the paper. This is a subject of great interest in a commercial point of view, as, if perfectly successful—and, from the experiments of Mr. Crane, on a large scale (noticed in a former *Literary Gazette*), there seems to be strong grounds for supposing it may be so—it is a question whether the discovery will prove more beneficial or injurious to the prosperity of this country. On the one hand, it was urged by Mr. Crane, that at least one-third of the immense coal-field of South Wales is composed of anthracite coal, which will thus, for the first time, be brought into extensive use for the purposes of smelting; but, on the other hand, it must be remembered that this description of coal exists, together with iron ore, in great abundance in the United States of America,* as well as in various parts of the Continent, the inhabitants of which would, if the theory hold good, be enabled to rival our works at a cheap rate. Mr. Crane stated that he had smelted a ton of iron, on an average, with less than 27 cwt. of anthracite coal; and, in regard to quality, the result was perfectly satisfactory. His works had long been noted for producing iron, equal, if not superior, to others in South Wales; and, by means of anthracite coal, he had been able to improve its quality. Anthracite coal being almost entirely composed of carbon, it was his opinion that he would be able, at no distant period, to produce, by its means, an iron not inferior to that formerly smelted by charcoal. Having beds of bituminous coal, as well as anthracite, in his possession, he had instituted comparisons as to the amount of iron which could be produced by the most economical application of each, and he found that there was a very considerable saving in the use of the latter. Mr. Crane then gave a highly descriptive account of the manner in which he had first discovered the means of applying his discovery to the combustion of the coal. The mode in which he now conducted the smelting was by means of a cupola furnace, into which he urged a stream of air, heated to such a degree as to be able to melt lead; the effect of this hot blast being all that was necessary to produce that combustion of the coal requisite for the reduction of the ore.

* The American journals, in their usual jocular manner, settled this question in another way. "It has been found," said the editor, "that anthracite agrees with coal in all its elements, its carbon, its nitrogen, &c. &c. The only difference is, that *coal will burn, and anthracite won't.*"

Dr. Kane proceeded to explain the nature of pyroacetic spirit. If acetate of barytes be exposed to a certain temperature, there will remain in the vessel containing it carbonate of barytes; whilst a peculiar fluid, somewhat resembling alcohol, is separated. This fluid has been long known by the name of pyroacetic spirit. Its composition and properties have been examined by many chemists, several of whom have noticed its power of combining with other bodies. In order to understand the alteration which it undergoes, we must take its formation, and consider it as being C 6, H 6,62. He conceived that pyroacetic spirit was constituted very similarly to alcohol. At present, there are two alcoholic compounds known—the common wine alcohol, and the common pyroacetic spirit. Dr. Kane then described the various combinations which the spirit enters into with acids and other substances, illustrating the whole by means of diagrams, shewing the atomic proportions of each simple element.

A paper of Mr. Golding Bird, on the crystalisation of metals by voltaic agency, was then read.

In the Chemical Section, the following paper by Mr. Black (whose work on Brewing, &c. has received our warm praise) was read; and it is one of those so generally and practically useful, as well as new and ingenious, that we go out of our routine to insert, in our first No. of these reports, the *Observations on the injurious influence which Electricity exerts in Brewing and Distilling.*

I trust (says Mr. Black) I may be excused in drawing the attention of the meeting of the British Association to a short notice of the injurious influence which electricity exerts on the fermentation of the worts of the brewer and the wash of the distiller. The powerful and injurious effects produced by this agent in the manufacture of beer, I endeavoured to point out in a little work, lately published, on Brewing; which, although it has excited some notice among a few practical men, yet the subject has not received that due attention which its great importance deserves. But I entertain a hope, that this matter will stimulate some members of the Association minutely to examine the nature and extent of the electrical agency, and, by well-devised experiments (towards which, if required, I should most willingly give any information or assistance), succeed in convincing brewers and distillers of the necessity of studying the laws which regulate this all-powerful agent, in order that they may avoid its injurious effects in the manufacture of beer or spirits. Beer, to the industrious classes in this country, may be considered a necessary of life; and its wholesomeness and purity must, therefore, be of vital importance. The quality varies exceedingly in different parts of the kingdom, and what is considered good beer in one district, may in other parts be pronounced *execrable*. One great cause of the inferiority of beer and ales in the country, and the great diversity of flavour, arises from the want of competition; it being only in the large towns that strong competition exists. In the country districts there is little or none. The brewers have been long in the habit of purchasing up all the public-houses in their neighbourhood, and these houses being limited in number, the labouring classes are prevented from selecting their own beverage, and have no choice but to drink that of the proprietors of the public-houses, and who are also the brewers. Most of such beers are very imperfectly manufactured, and are usually foul and yeast-bitten, and have a very disagreeable, rank bitter, derived from the yeast left in the beer, instead of its being thrown out by a proper process. This bitter, although often mistaken for, is very different from, the agreeable and aromatic flavour of the hop. Yeast-bitten beer is particularly injurious to wet-nurses in the suckling of infants. In some districts, unsound, stale beer, is the favourite beverage; so that, from long usage, good, sound beer, would not be appreciated, but rejected. A frequent cause of such inferior beers proceeds from want of proper attention being paid to cleanliness, and the soundness of the worts, accompanied with imperfect fermentation. I suspect, however, that it very often proceeds from electric or galvanic agency; the fermenting vessels being very frequently sunk in the ground, are particularly liable to be affected by all electrical and atmospherical changes, as I have had many opportunities of observing. It is to the latter that I wish to direct the attention of the meeting. It has long been familiarly known, that thunder sours beer; but, though generally known, but few brewers have inquired into the cause, or adopted means to prevent this atmospheric, or other action, affecting beer during thunder-storms, or in the different electric states of the earth and atmosphere. The extreme rapidity with which the electricity is evolved during a thunder-storm, is strikingly exhibited in a distiller's fermenting back. These fermenting backs are often made of cast-iron, and either fixed in the earth, or connected with it by an intermediate iron vessel, employed in regulating the temperature. A very short time after a thunder-storm begins, or when the atmosphere is highly charged with electric matter, the appearance in the back altogether changes. The usual healthy appearance of the fermentation disappears; and it is now attended with a hissing noise and frothy head: and when samples are drawn and examined, is found to have risen, instead of fallen, in gravity many degrees, and to contain 5 per cent, or more, of acid. Under these circumstances, the distiller has no alternative but to run off his wash into the stills, although they may be as high as 10 or 12 degrees above water, or occasionally of much higher gravity.

But the chemical agency a highly electrical state of the atmosphere possesses is not confined solely to the fermentation of vegetable substances; it affects even the smelting of iron. It is well known to iron-masters and smelters, that in certain conditions of the atmosphere, and particularly during sultry summer weather, that they can never with certainty calculate upon producing good, soft, tenacious iron,

technically called No. 1: it is much more generally the white, hard, inferior kind, called No. 3, or a mixture of Nos. 2 and 3. Now, in such circumstances, it will be found that the iron was melted during a thunder-storm, or when the air was highly charged with electricity. In these cases the ore shall be of the best quality, and all the other manipulations attending the melting carefully looked after, and even a much greater charge of coke be employed (the *dernier resort* of the melter), when apprehensive of hard, inferior iron, yet, notwithstanding all these precautions, the yield of iron is of the No. 3 quality. The operating cause we attribute to electricity. The result of my observations, in different parts of the kingdom (and they have been pretty widely extended), is, that where the fermenting tuns have been placed upon baked wooden bearers, and supported upon brick or wooden piers, or columns, and every other precaution used to insulate the vessels as much as possible, the fermentations proceed regularly and progressively, and the beers turn out good, bright, and sound, and will keep so; but that when placed on, or imbedded in the earth, and when electric action is induced by a chain of copper or metal pipes, making a complete galvanic circle, the fermentations are very irregular, and do not go through their changes in any thing like order, and shewing only extremely high, light, puffy heads. Frequently the attenuation or decrease of specific gravity altogether stops; and the beer becomes sour, or partially unsound, before leaving the fermenting tun. A rather singular attendant on this galvanic action in the fermentation is, that the temperature of the worts in the fermenting tun will rise, in the course of one night, 10 or 12 degrees, or more, and without a corresponding attenuation; while, in all healthy fermentations, there is a regular and proportional decrease of gravity for increase of temperature. This is a point (although at present very little known or attended to) of the utmost consequence in regulating the proper quantities of yeast to be employed as a ferment, according to the specific gravity of the worts, and quality of the beer to be produced. A great deal of attention has of late years been bestowed on the mechanical construction of the utensils employed in breweries, in order to diminish manual labour and waste of beer, and in making them quite *automatic*. In these improvements, unfortunately, too little attention has been paid to the injurious action of galvanism, or electricity. We know of one exception. An extensive establishment in London, well aware of the action induced by electricity, took the wise precaution, a few years since, when erecting fermenting tuns, containing 1400 barrels each, and supported by iron columns, to have them insulated, from which they have derived great benefit. The same house, sensible of the importance of observing the atmospheric changes, has kept a meteorological journal for the last ten years; the observations being made three times a day, at four o'clock, A.M., at nine o'clock, A.M., and at three o'clock, P.M. In order to prevent the electric action in the fermentations of beer or wash, the vessels should be thoroughly insulated, and the mains, or pipes, leading to or from these vessels, should be thoroughly disconnected from them, by means of union-screws, or perhaps still better, by a short hose of leather, or caoutchouc, or Indian rubber. By these simple means, the galvanic circle otherwise formed by the metal pipes and cocks, &c. employed in removing the worts, refrigerating, or cleansing, will be broken, and a uniform, regular, and healthy fermentation be produced. I have often been inclined to think, that the great difference in the quality of wines we read of, produced from vineyards within a short distance of each other, may as often be traced to some electrical action, caused by a bad arrangement of the fermenting vessels, as to any difference in the soil or quality of the grapes. I hope these few observations, brief as they may be, will draw the attention of men of science, and also of the manufacturer, to the subject, believing it one of primary importance in this branch of the chemical arts.

Mr. Faraday and Dr. T. Thomson highly complimented Mr. Black on the suggestions in this paper; and considered them particularly worthy of the attention of brewers and distillers.

Section C.—In the following we have also anticipated our daily report, on account of the great interest of the subject.

Major Sabine's Report on the Variations in the Intensity of Terrestrial Magnetism at different parts of the Earth's surface.—This report was to have been printed in the last year's volume of the Reports of the British Association. The author explained that the delay had been occasioned by the influx of new and very valuable materials, with which he had been unexpectedly furnished when engaged in completing the report. Amongst these, he specified a series of observations made by Captain Fitzroy, and the officers of H. M. S. Beagle, during her five years' voyage of survey and circumnavigation, by which the value of the terrestrial intensity had been determined at between thirty and forty widely scattered stations, principally in the southern hemisphere, where such determination had been previously a great desideratum. The deduction of the results of these and other observations, which were put into the author's hands in the state in which they were made, was a work of much time and labour; but he considers their accession to the report an increase of its value, which far more than counterbalances the inconvenience of the delays. The report is now complete. Major Sabine stated that his object in this report had been to collect and present, in a condensed and arranged form, the results of all the observations on this subject which have been made, by observers of all nations, from the close of the last century, when these researches commenced, to the present time. The greater part of these existed previously, dispersed in the transactions of scientific societies, and in scientific journals, chiefly in the German language, and very rarely to be met with in this country. The number of separate determinations collected in this report exceeds 600; and the number of different stations distributed over the earth's surface, at which the terrestrial intensity has been observed, falls a little short of 500. The observers are twenty-one in number, of which the observations of seven are previously unpublished. The author gave some short details of the arrangement of the tables in which the results are comprised; and of the manner in which the values of the intensity are expressed; also on the degree of accord in the results of different observers who have visited the same station, from chance, some estimate may be formed of the degree of accuracy of each single determination. The report is accompanied by maps, in which the several determinations are also entered, and the lines of equal magnetic intensity traced, for the purpose of enabling a more ready apprehension of the systematic distribution of the intensity on the earth's surface, which the facts now collected establish. Major Sabine discusses the general inferences with regard to the distribution of the intensity, which are pointed out by the concurrent and consistent testimony of so large a body of results; and concludes by pointing out the parts of the earth where further observations are most desirable, and noticing the practical suggestions, in regard to instruments, and the methods of observation, which are either expressly mentioned, or may be gathered from the experience of the observers whose observations he has discussed.

Section D.—Dr. Traill exhibited and gave a brief notice of the *Argus Persicas*, or the Poisonous Bug of Minnaeh, in Persia. The specimen which the learned doctor produced had been procured from Persia by a friend of his, who favoured him with a short statement relative to the nature of the insect. The bite of it was exceedingly dangerous, producing a violent fever, resembling our typhus fever, and, in many instances, occasioning death. In some villages it was considered almost certain death to sleep.

Mr. J. E. Gray brought forward the new genus, allied to the water-lily, and called *Victoria Regina*, which was discovered by Mr. R. H. Schomburgk, last January, in the river Berbice. At the meeting of the Botanical Society, last Thursday, the following letter (which has appeared in all the London newspapers) was read from him, dated New Amsterdam, Berbice, May 11th, 1837, on a new genus allied to the water-lily, named *Victoria Regina*, by permission of her majesty. The communication was accompanied by magnificent drawings of the plant, one half the natural size. The following account is extracted from Mr. Schomburgk's paper:—"It was on the 1st of January this year, while contending with the difficulties nature opposed in different forms to our progress up the River Berbice (in British Guiana), that we arrived at a point where the river expanded and formed a currentless basin. Some object on the southern extremity of this basin attracted my attention; it was impossible to form any idea what it could be, and animating the crew to increase the rate of paddling, shortly afterwards we were opposite the object which had raised my curiosity. A vegetable wonder! All calamities were forgotten; I felt as a botanist, and felt myself rewarded; a gigantic leaf, from five to six feet in diameter, salver-shaped, with a broad rim, of a light green above, and a vivid crimson below, resting upon the water. Quite in character with the wonderful leaf was the luxuriant flower, consisting of many hundred petals, passing in alternate tints from pure white to rose and pink. The smooth water was covered with them, and I rowed from one to another, and observed always something new to admire. The leaf, on its surface, is of a bright green; in form orbiculate, with this exception—opposite its axis, where it is slightly bent in, its diameter measured from five to six feet. Around the margin extended a rim, about three to five inches high; on the inside light green, like the surface of the leaf; on the outside, like the leaf's lower part, of a bright crimson. The stem of the flower is an inch thick near the calyx, and is studded with sharp elastic prickles about three quarters of an inch in length. The calyx is four-leaved, each upwards of seven inches in length, and three in breadth at the base; they are thick white inside, reddish brown and prickly outside. The diameter of the calyx is twelve to thirteen inches; on it rests the magnificent flower, which, when fully developed, covers completely the calyx with its

hundred petals. When it first opens, it is white with pink in the middle, which spreads over the whole flower the more it advances in age, and it is generally found the next day of a pink colour. As if to enhance its beauty, it is sweet scented. Like others of its tribe, it possesses a fleshy disc, and petals and stamens pass gradually into each other, and many petaloid leaves may be observed, which have vestiges of an anther. We met them afterwards frequently; and the higher we advanced the more gigantic they became. We measured a leaf which was six feet five inches in diameter; its rim five and a half inches high, and the flower across fifteen inches. The flower is much injured by a beetle, Thrincias species, which destroys completely the inner part. We have counted from twenty to thirty in one flower." A fine drawing of the plant was hung behind the chair.

A discussion of much interest ensued on Mr. Cross's experiments, in which that gentleman had supposed the existence of certain insects in flints. Mr. Gray informed the meeting of the results of Mr. Children's repetition of Mr. Cross's experiment on the reproduction of insects from the solution of silicia, and that they did not confirm the opinions of Mr. Cross. On the contrary, Mr. C. shews that the insects found are such as occur in the dust of rooms; and had no doubt but that accident had led to their appearance amidst Mr. Cross's apparatus.* It was suggested, however, that eggs might exist. A very animated discussion took place on the subject.

The Rev. T. W. Hope read a communication from Sir Thomas Phillips, on the best method of destroying the insects which attack books and manuscripts.

The last paper presented was one by Mr. Ball, on *Erica Machaina*, with an exhibition of living specimens.

Section E.—In this section two papers of considerable importance were communicated. *First*, Dr. Williams, of London, read a second report of the London sub-committee of the British Association, to investigate the motions and sounds of the heart. With regard to the abnormal sounds of the heart, the first, or sestonic sound of the heart was caused by the sudden tightening of the ventricles as they acted. The fifth class of experiments, relating to the production of sound, had been tried by means of a caoutchouc tube, fastened into a stop-cock at the bottom of a cistern, and by means of this they had been enabled to produce all the sounds heard by the medium of the stethoscope in the heart. When the water was permitted to flow, so as to distend the India-rubber tube, and the atmosphere had been completely expelled from it, a slight indenting pressure in the tube, produced the murmuring sound so often heard, which was increased in volume by increasing the force of the water. By inserting a pin through the tube, the whistling noise often heard was produced, and by sticking a broader piece of quill through, it produced the blowing noise. By these means, by variety of pressure, and by tightening a ligature round the tube, and causing angular obstructions in it, all the sounds of whizzing, grasping, blowing, murmuring, purring, and cooing, heard in the heart and arteries, by means of the stethoscope could be distinctly heard. When the walls of the tube became flaccid, a fremitus sound was caused. From all these results it was sufficient to say, a certain obstruction in the physical was the cause of all the murmurs or sounds in the tube. The sounds produced by water in the tube by obstructions, were so similar to those produced in tubes by air, that it might be imagined the same cause produced the one as the other. Dr. Williams then proceeded to detail several experiments in the production of murmurs in the arteries of the living body. About two inches of the carotid artery of a dog was laid bare, and different degrees of pressure upon it produced the different murmurs of blowing, whizzing, &c. heard through the medium of the stethoscope in the arteries and in the heart. The artery was then made to contract by slightly scraping it with a scalpel, and applying salt to the part. This produced a gradual constriction, but the stethoscope detected no murmur. A small pressure, however, immediately caused a murmur. Near the construction the pulse was harder and sharper than above or below. It was then found that a murmur could be produced by pressure on the sub-clavian, carotid, or femoral arteries, in the human subject, which might be heard through a stethoscope, which was sometimes like the singing of a kettle, or the cooing of a dove, &c. The carotid of the dog was afterwards slightly punctured, and a jet of blood followed about six yards high, which, in a few minutes, caused the death of the dog by hæmorrhage. After respiration had ceased, it was found that the heart continued to beat for about two minutes. It was proved that the murmuring might be produced in a healthy subject, by moderate pressure on a principal artery, and that, therefore, this sound did not indicate disease in the artery. Accidental pressure, it was found, would also produce what the French have termed the *bruet de diable*.

A long discussion ensued between Drs. Copeland, Grinfield, Johnson, and others. The heart was said to be the *ultimo moriens;* would continue its action though no blood was there; that respiration first ceased its action, then the brain, and lastly the heart, a fact which Dr. Grinfield had verified from experiment by poison, chiefly prussic acid. After the lungs had discontinued breathing, he found the heart beating, and the bowels proceeding with their peristaltic action simultaneously. Dr. Johnson differed from the report, which would seem to prove that all sounds of the heart and arteries were symptomatic of disease. This was erroneous; for, on himself and others, he found, by excitement, and after taking food, he could distinguish some sounds, though he and others were healthy; and would therefore recommend that increased motion from excitement should be more particularly examined; but Dr. Williams stated that it was found that various velocities in perfect irregular tubes did not create sound, and would recommend medical gentlemen not to try experiments upon themselves. It was concluded that Dr. Williams should repeat the experiment in the laboratory of the Medical Institution, at ten o'clock to-morrow morning (this day).

Second, Mr. Brett, surgeon, now read a most elaborate paper, replete with novelty and ingenuity, on the chemistry of expectorated matters, and their diagnostic relations with diseases of the lungs, especially consumption. After enumerating the state of albumen in blood, he proceeded to shew the composition of spittle and the sputa from the lungs. The latter kind of matter varied in its physical and chemical qualities according to the stage of the disease and its nature. In the latter stage, when consumption was established, globules existed shewn by the microscope, and chemistry detected much albumen, and even iron. Analysis also found the matter of broken down tubercles was the same as pus, and that perfect puriform matter consisted of water, albumen, animal matter, soluble in spirit of wine, as fat, ozmazone, &c.; animal matter, soluble in water; salts, chiefly chlorates, phosphates, sulphates, &c.; soda. In the last stage, oxide of iron. The paper contained many tables, fully bearing out the writer's propositions; and it underwent a long examination by Mr. Bird, the President, Drs. Roget, Williams, Johnson, &c.

Section F.—A paper of importance, viz. a statement of the British trade with America during a long series of years, by Mr. Porter, was read. "In this place, and especially at the present time, it cannot be necessary to offer an apology to the Statistical Section of the British Association, for presenting to its notice a brief record of the growth, progress, and present extent of the trade carried on between the United Kingdom and that portion of the New World which now constitutes the United States of America. There is, however, some necessity for bespeaking the indulgence of the Section towards the execution of an attempt, which is necessarily incomplete, because the commercial records relating to the earlier periods of our history are exceedingly scanty, and, besides, are too frequently without the stamp of authenticity; so that their value is to be estimated rather from their agreement with other known facts, than from any confidence we should otherwise place in the records themselves. Until comparatively a very recent period, the importance of statistical labours was not understood in this country. It was not seen in what manner, nor in how great a degree, the knowledge of facts applying to former years, and systematically arranged, could assist the legislature and public functionaries in conducting the business of government, and providing for the prosperity of future years. This indifference to what is now recognised as a work of high necessity, was formerly not confined to commercial details. It might, perhaps, be thought that the record of those details would be best preserved by commercial men, who were most interested in the subject; but the deficiency of which we now complain was exhibited in a matter of much more obvious importance to the government and the nation at large, namely, the financial accounts of the country. In these days of watchfulness and severe scrutiny into every branch of the public expenditure, it will hardly be credited that there is not a trace to be found in the Journals of the House of Commons of any account of the produce of the taxes having been called for by parliament during the whole course of the American war,—a fact attested by the late Mr. George Rose, who, having been for many years a cabinet minister, knew well the importance of such returns. As might naturally be expected, the carelessness thus evinced by the members of the legislature was not confined to them, but was shewn also by the public accountants. In the published report of the Finance Committee, which sat in 1782, it is stated that 'the committee thought it right to call for an account of the net produce of all the taxes from 1774 to 1782, distinguishing each year; but as that account consisted of more than one hundred and fifty items, put together in a confused manner, not totalled by the officer of the exchequer, the result could not be stated.' Of late years we have begun to do that for our successors, which it is so much to be wished our predecessors had done

* On further inquiry, we are told that the insect described in Mr. Children's experiments is an Acarus; and that, as it was not exhibited, some gentlemen only supposed that it was the common acarus.

for us. The body of facts now systematically collected in this country at the period of their actual occurrence, and attested by the signatures of public functionaries, whose fidelity and accuracy cannot be doubted, are every day becoming more and more valuable through their accumulation; and will at length provide so steady and so bright a light, by which to read the pages of economical science, that it will be hardly possible to misinterpret the lessons they convey. Happily, too, the collection of statistical data is not confined to our own country; so that by this means we shall not only obtain records of various classes of facts which belong to dissimilar climates, and which are called forth by different circumstances, but we shall also be able to judge of the manner and degree in which the same facts and measures are capable of being modified by the force of circumstances, —a kind of knowledge calculated to exercise a powerful and most beneficial influence upon the welfare and happiness of mankind. Those persons only, who have given their attention to the collection of statistical information, can form an adequate idea of the advantage that may at some time or other be drawn from the record of even an insulated and apparently an unimportant fact, which may throw light upon matters, and render them pregnant with instruction, which, without this help, would have continued unintelligible, if even they should not be misunderstood, and thence perverted to mischievous ends. It is this conviction which emboldens me to offer to the Section the following imperfect sketch: the facts which it embodies, few and insufficient as they may be considered, are drawn from sources, some of which are not generally accessible, and are fast passing into oblivion. The British colonies, which now form part of the United States of America, were, with the exception of Georgia, all founded in the seventeenth century. The date of the first settlement of each individual colony was as follows:

Virginia	1607	Maryland	1633
New York	1614	Connecticut	1635
Massachusetts	1620	Rhode Island	1636
New Hampshire	1623	North Carolina	1650
New Jersey	1624	South Carolina	1670
Delaware	1627	Pennsylvania	1682
Maine	1630	Georgia	1733

The earliest of these settlements resulted from the persecutions on account of religious opinions then prevalent in England, and had no view to the extension of our commerce. The success of the colonists, however, naturally gave rise to a brisk commercial intercourse with the mother country; and we are told by Sir Joshua Childs, in his 'New Discourse of Trade,' published about 1670, that at that time 'the trade to our American plantations employed nearly two-thirds of all our English shipping, and thereby gave constant sustenance to, it may be, 200,000 persons here at home.' It is most probable that the West India colonies were included in this estimate, because, thirty years later, the whole imports and exports from and to the North American provinces did not amount to 700,000*l.* In a work entitled, 'The Trade and Navigation of England Considered,' first published in 1726, by Joshua Gee, we find the following notice of the trade of those provinces:—'The tobacco plantations take from England their clothing, household goods, and utensils of all kinds; and England takes from them tobacco, for use and for re-exportation. Carolina lies in a happy climate, producing the best rice in the world. Pennsylvania, within forty years, has made wonderful improvements, which have very much enlarged their demands upon us for broad-cloths, druggets, serges, stuffs, and manufactures of all sorts. They supply the sugar plantations with lumber, pipe-staves, &c.' A tract was published in London, in 1731, under the title of 'The Importance of the British Plantations in America to this Kingdom;' and in this tract it is stated that Virginia and Maryland together then sent annually to Great Britain 60,000 hogsheads of tobacco, each weighing 600 lbs., which, at 2½*d.* per lb., amounted to 375,000*l.*: that the shipping employed to bring home this tobacco, amounted to 24,000 tons; the freight, at 30*s.* per hogshead, was 90,000*l.*; other charges, and commission, 60,000*l.*' The author adds, 'In the same ships are brought lumber, 15,000*l.*, and skins and furs, 6000*l.*' The trade of Maryland and Virginia was then almost wholly confined to the mother country; that to all places other than Great Britain having been carried on in shipping, the aggregate measurement of which did not exceed 1000 tons annually. The export trade of Pennsylvania, at that time, consisted of agricultural produce, which was sent principally to Spain and Portugal, and the proceeds remitted to England in payment for manufactures, to the amount of 150,000*l.* The produce of the New England fisheries, amounting to 172,500*l.*, was also remitted to Great Britain for the same purpose: besides which, masts for the navy, and other naval stores, were sent here, to the annual value of 400,000*l.*, in exchange for British manufactures and East India goods. About the time just alluded to, the foreign trade of this country experienced a considerable increase. In Smith's 'Memoirs of Wool,' a work of much authority, published in 1747, it is stated, that 'before the year 1718, our foreign trade was chiefly confined to London, Bristol, and Liverpool; but it is now become so general, that not one seaport, and scarce an inland town in the kingdom, is without adventurers, who export considerably, and correspond directly with most of the trading countries of Europe and America.' The early growth of our cotton manufacture is thus alluded to in these memoirs:—'The manufacture of cotton, mixed and plain, is arrived at so great a perfection within these twenty years, that we do not only make enough for our own consumption, but supply our colonies, and many of the nations of Europe. The benefits arising from this branch are such as to enable the manufacturers of Manchester alone to lay out above 30,000*l.* a-year, for many years past, on additional buildings. It is computed that 2000 new houses have been built in that industrious town within these twenty years.' It was not until half a century had elapsed, from the period referred to in the foregoing extract, and when they had secured their independence, that any part of the raw material employed in the cotton manufacture was received from the British plantations in America. A few bags of cotton, received in 1785 and 1786, were apparently of foreign growth, and had been received in America from the Spanish main. Cotton was raised in gardens in the United States before 1786; but that was the first year in which it was cultivated by planters as a crop; and 1787 was the earliest year in which any of the growth of the country was exported. Before the separation of the British provinces from the mother country, the statements which were given concerning their trade exhibited that of each province separately. For a long period, prior to the independence of America being recognised, the operation of the navigation laws had given to this country a monopoly of the trade with its colonies; and, it is worthy of remark, that so long as the American provinces continued thus connected with England, the increase of the commercial intercourse bore a very inadequate proportion to their increasing population. In 1749, the number of inhabitants in the provinces was stated to be 1,046,000; and the official value of exports and imports, was 2,117,845*l.* Assuming that the population, between 1749 and 1774, increased steadily at the rate afterwards exhibited by the census of 1790, the number of inhabitants in 1774 must have been 2,803,625. If the trade had increased in an equal ratio, the imports and exports in 1774 would have amounted to 5,676,523*l.*; whereas the actual amount was only 3,964,288*l.*, shewing a deficiency of 30 per cent. It is probable that the estimate of the population in 1749 may have been below the truth; but we can scarcely imagine that it would be wrong to any thing approaching so great an extent as would render the trade of the two periods proportional; and it is impossible to believe otherwise than that there had been a virtual diminution of trade between England and the North American provinces in the twenty-five years that preceded the war of independence. The earliest census for the United States was taken in 1790, when the population was found to be 3,929,328. The official value of our trade with the United States, in that year, was 4,622,851*l.* In 1800, the population was found to have increased to 5,309,758. At the same rate of increase, the trade in that year should have been 6,246,925*l.*; but, as it actually amounted to 9,243,432*l.*, the increase was greater than that of the population by 48 per cent. In 1810, the population was 7,239,903, and the trade 10,427,722*l.* If the proportion of 1790 had been preserved, the amount would have been 8,517,739*l.* The excess, after allowing for the increased population, was, therefore, 22 per cent; but if the comparison is made with 1800, it appears that the increased trade is not quite 13 per cent, while the population was augmented at the rate of 36 per cent: there is, therefore, a virtual deficiency of 23 per cent, which is, without doubt, to be ascribed to the operation of the orders in council issued in retaliation of the Milan and Berlin decrees of Napoleon. Pursuing the comparison to 1820, we find that the population was then 9,638,166, shewing an increase, over 1810, of 33¼ per cent; on the other hand, there is a falling off in the official value of the trade between the two countries at the rate of 27 per cent. This circumstance must be attributed to causes of a temporary nature, and which are capable of easy explanation. On the renewal of the intercourse between England and America, after the peace in 1815, our merchants and manufacturers, stimulated doubly by the deficiency of British goods in the American market, and their superabundance, and consequent low price at home, made such large shipments of manufactures to the United States, that a glut was there produced; and, as this occurred simultaneously with a considerable derangement of the currency in the commercial cities of America, English goods were sacrificed at ruinous prices. In the meantime, the commercial distress which had visited our own country was passing away, and an effective demand for our products had arisen from other quarters, as appears from the fact, that although the real value of British goods exported to the United States, which, on the average of the five preceding years, was near 9,000,000*l.*, fell, in 1820, to 3,875,286*l.*, the general exports from the United Kingdom to foreign countries were greater in 1820 than they had been in the preceding year. In 1830, the date of the last census, the popu-

lation of the United States was 12,856,165, and the official value of the trade with this country, 16,292,630*l.* The increase, as compared with 1790, was 227 per cent on the population, and 252 per cent on the amount of trade. If the comparison is made with the remaining decennary periods, it will be found that the increase in 1830 was as follows:—

	Increase per Cent. Population.	Trade.
Compared with 1800	142	76
—— 1810	77¼	56
—— 1820	33¼	115

The increase of population in the United States, between 1820 and 1830, was at the rate of 3⅓ per cent per annum. If we assume that the increase has since gone forward at the rate of 3 per cent in each year, the number of American citizens in 1835 must have been 14,784,589. The official value of their trade with this country in that year was 25,671,602*l.* A comparison of this amount with the value of the trade in the years of the different enumerations, exhibits the following results:—

	Increase per Cent. Population.	Trade.
Compared with 1790	276	455
—— 1800	178	177
—— 1810	104	146
—— 1820	53	239
—— 1830	15	57

It is not simply with reference to the numerical increase of the citizens of the United States that we should consider this question of the increase of our trade. During the forty-seven years that have elapsed since the first census was taken, in 1790, at least 11,000,000 of inhabitants have been added to their number, being equal to an increase of 276 per cent. But during that time we are fully warranted in believing that the wealth of the country has been augmented in a much greater proportion; and it may be fairly presumed that, but for the untoward interference of wars, and of that which is scarcely less inimical to national prosperity than war — commercial jealousy, the dealings between the two countries must have become far more considerable than they are. During the period in question, America has added materially to her means of consuming foreign products, by the extent to which she has carried the cultivation of exportable products. In 1791, the whole export of cotton from the United States was under 200,000 lbs.; and the average annual importation of American cotton into this country, during the last ten years, has exceeded 225,000,000 lbs., the value of which cannot have been less than 7,500,000*l.* per annum. In 1836 our importation was 289,615,692 lbs., which, at the average price of the year, probably produced more than 10,000,000*l.* sterling. Under the system of restriction acted upon in this country (how wisely it is not our present purpose to inquire), with the declared object of favouring the produce of our own soil, and of loading with discriminating duties such articles, the produce of other countries, as come into competition with the productions of our colonies and dependencies, the trade between us and the United States must have dwindled away to perfect insignificance, but for the adoption and great encouragement that has been there afforded to the cultivation of cotton. On the other hand, it may fairly be doubted whether, but for the resource that has been so unexpectedly found in the fertile valleys of the Mississippi, our cotton manufacture, so far from having attained its now gigantic growth, could ever have ranked among the staple productions of England. The intercourse between this country and the United States is important, not only to our merchants and manufacturers, but also to our ship-owners, and that in a continually augmenting degree. The tonnage of vessels which entered the ports of the United States from foreign countries, in each year, from 1821 to 1836, distinguishing American and British from other shipping, was as follows:—

Years ending 30th September.	American.	British.	Other Foreign Vessels.	Total.	Centesimal proportion of British to American Tonnage.
1821	765,098	55,188	26,338	846,624	7·21
1822	797,981	70,669	29,872	898,502	8·97
1823	775,271	89,553	29,915	894,739	11·55
1824	850,033	67,351	35,016	952,400	7·92
1825	880,754	63,036	29,891	973,681	7·15
1826	942,206	69,295	36,359	1,047,860	7·35
1827	918,361	99,114	38,475	1,055,950	10·79
1828	868,381	104,167	46,056	1,018,604	11·99
1829	872,949	86,377	44,366	1,003,692	9·89
1830	967,227	87,231	44,669	1,099,127	9·02
1831	922,952	215,887	66,061	1,204,900	23·39
1832	949,622	288,841	104,197	1,342,660	30·41
1833	1,111,441	383,487	113,218	1,608,146	34·50
1834	1,074,670	453,495	114,557	1,642,722	42·19
1835	1,352,653	529,922	111,388	1,993,963	39·18
1836	1,255,384	547,606	132,607	1,935,597	43·62

These figures do not in any way justify the complaints of those persons who can see nothing but ruin to the shipping interest of this country from the relaxation of our navigation laws, introduced by the late Mr. Huskisson, and adopted and carried out by his successors in office. The most interesting part by far of our trade with America consists in our exports of manufactured goods. The extent of the shipments in 1815 is evidently the result of the renewal of commercial intercourse after the war, but the years 1805, 1806, and 1807, 1835 and 1836, followed long periods of friendly intercourse. The serious falling off that occurred in 1808 and 1809 must, as already stated, be attributed to the effect of our celebrated orders in council, issued in retaliation for Napoleon's Milan and Berlin decrees. Nearly one-third of our foreign export trade in 1805, 1806, and 1807, was carried on with the United States. Our trade with the continental nations was destroyed as far as the power of France could destroy it, and under these circumstances it was of peculiar importance that we should preserve, as far as possible, a branch of trade which gave so much and such constant employment to our merchants and manufacturers. It is difficult to account for the blindness and infatuation of the government, which could adopt a course by which what was so important to the nation, both commercially and politically, was put to hazard. The great political advantage of this trade may be thus explained. The merchants of the United States were accustomed to send American produce to the continent of Europe, to a much greater value than the goods they took in return. In their dealings with this country, their practice was directly the contrary; their purchases from us being always much greater than the American produce taken off by the English markets. The means for liquidating the balance thus raised against the American merchants were found in the circumstances of their trade with the remaining portion of Europe. The funds which those merchants had provided there in excess, furnished what was wanting to pay for the balance of their purchases from us, and a safe and most convenient mode of transmitting the funds for this purpose was offered in bills on the English treasury; the specie wherewith these were purchased being applied to pay subsidies and military charges on the Continent, for which this government was answerable, and for which it was difficult otherwise to provide. It cannot be necessary in this place to dwell upon the failure which so signally attended the retaliatory orders in council of the English government. Our enemy had shut up every channel within his power through which our commerce could flow, and we, instead of looking out for new channels, or making the most of those which were beyond the control of our opponent, most unwisely aided him in his scheme, by putting a stop to all trade that was not conducted through those old accustomed channels. As might have been expected, the regulations of the belligerents were not such as the government of the United States would adopt for the prosecution of their trade with Europe. Finding that their flag was excluded from the ports of the Continent, except upon terms which they considered degrading, all commercial intercourse with either of the belligerents was interdicted; and the result, as it affected our manufactures, is apparent in the diminished amount of our exports. This system of non-intercourse was followed, as will be remembered, by a declaration of war against this country on the part of America, affording, it is to be hoped, the last instance in which two powerful countries, whose interests are so nearly identical in every pursuit that can increase the happiness and advance the true dignity of human nature, will suffer themselves to be dragged into hostility for the gratification of mistaken ideas of honour. The high degree of importance to each country of the trade which it carries on with the other, needs no further exemplification than is offered by the tables appended to this memoir.* The proportions which that trade bears to the entire foreign trade of each country are there given. In this point of view, it would appear as if the intercourse were of more importance to America than it is to this country, inasmuch as the trade with the United Kingdom bears a larger proportion to the whole trade of the United States than our trade with those States bears to the whole foreign trade of this country. But, on the other hand, it may be truly said, that this densely peopled country is necessarily more dependent for prosperity upon its trade than America, and would suffer more from the loss of the smaller proportional amount of its commerce, which is involved in the intercourse we have been considering, than the United States would suffer from the loss of the much larger proportional amount of its trade which depends upon England.

"*Centesimal Proportion which the Trade between the United Kingdom and the United States of America bore to the whole Foreign Trade of each Country respectively, in each year, from* 1821 *to* 1835.

Years.	Centesimal Proportion which the Trade with England bore to the whole Foreign Trade of the United States.	Centesimal Proportion which the Trade with the United States bore to the whole Foreign Export Trade of England.
1821	35·95	16·95
1822	38·16	18·57
1823	32·70	15·41
1824	31·75	15·86
1825	37·67	18·31
1826	29·60	14·77
1827	35·03	18·87
1828	34·75	15·78
1829	33·75	13·45
1830	33·13	16·02
1831	41·78	24·36
1832	35·99	15·00
1833	35·41	19·36
1834	39·61	16·43
1835	41·76	22·31

The proportion which our export trade with the United States bore to our whole export trade, was —

* Several interesting Tables are given in the Report of this Section, confirmatory of the statements contained in it, which were found impracticable to be given in the *Literary Gazette*; and for which we must refer our readers to the Report itself.

In 1805	29·91
1806	30·31
1807	31·80
1836	23·28

"In the foregoing pages, all remarks upon the state of convulsion into which this most important branch of our foreign trade has lately been thrown have been avoided, partly because its occurrence is too recent to allow of a sufficiently calm estimate being made of the cause or causes which led to the catastrophe, but chiefly because it would be difficult, if not impossible, to enter upon the subject without departing from that line of strict statistical research which it is so desirable to preserve in the proceedings of this Section of the British Association. It is with much hesitation that I venture, in conclusion, to offer one remark, which, however, falls sufficiently within the limit thus drawn. The shipments of British produce and manufactures, in the year 1836, amounted, according to the value declared by the shippers, to 53,368,571*l.*; of which sum, America took 12,425,605*l.*, or 23·28 per cent. The total shipments in 1835 amounted to 47,372,270*l.*; of which America took 10,568,455*l.*, or 22·31 per cent; the difference between the two years being, on the total shipments, 5,996,301*l.*; and on the shipments to America, 1,857,150*l.* Without admitting or denying that these figures give evidence of over-trading, I would venture to call your attention to the circumstances of the two people—namely, that the means of obtaining the comforts of life are enjoyed by a larger proportion of them, than is the case with any other people; that the habits and predilections of the citizens of the United States lead them to give a preference to British goods; that ours is the cheapest market in which they can procure many articles necessary to them; and that we are, out of all proportion, their best customers for the raw produce of their soil; and I would then ask whether, if the trade of the two countries were put upon a proper footing, and conducted upon enlightened principles, that amount of traffic should be considered excessive which gives annually to every citizen of the United States articles of British growth and manufacture to the value of sixteen shillings and ninepence three farthings?"

Mr. Ashworth read a paper on the state of education at Bolton, prepared by the Manchester Statistical Society. It shewed that, out of a population of 50,000 individuals, there were 2665 children educated in day schools, 6983 in Sunday schools; making a total of 11,094 scholars, including the dame and infant schools. The proportion of children educated between the ages of 5 and 15 was only one-sixth, whilst in Prussia it is one-third of the whole population. Some striking facts were mentioned as to the incompetency of the teachers in the day schools generally. They were kept in cellars, and other unsuitable places; and in many the neighbours were accustomed to come in, smoke their pipes over the fire, and talk with the master. One schoolmaster, on being questioned about his system of instruction, said he followed "the *graidley ould fashioned* road." One said that he had become a schoolmaster because he had lamed his foot. Another, a female, because she had "got poor, and *wur* a widow;" whilst several others said it was because they could not get a living by weaving.

From a discussion which ensued, it appeared that the greater part of the population was employed in the factories. A singular anomaly in the factory act was pointed out. That act provides that the children shall be allowed two hours a-day for school instruction, but makes no provision for a school being held. The consequence is that the children are sent into a room, which is called the school-room, for two hours a-day, and then furnished with a certificate of their attendance at school. Several members expressed a strong opinion as to the necessity of legislative interference, both at Bolton at elsewhere; there being too much reason to believe that Bolton only affords a specimen of the general deficiency of the means of education.

Education in the United States.—Dr. Taylor read an abstract of a report, as presented to the legislature of New York by the regents of the university in that state. The statements proved that our transatlantic brethren are fully alive to the importance of national education, and are adopting the means most likely to secure its general dissemination.

Section G.—Dr. Lardner read a paper, by Mr. G. Remington, on the railway balance lock.

Mr. Williams next read a paper on what is called a treffos-pump, which led to a long discussion; and it may be observed that many of the questions raised in this section, such as those respecting railroads, iron-smelting and strength, steam vessels, the quantum of generation of steam from coal, mining engines, &c. &c. are of a nature to affect the fortunes of so many commercial men and manufacturers, that they generally gave rise to very conflicting opinions, and to close and anxious investigation and debate. The present question involved such considerations; and the actions and powers of a variety of pumps were diligently canvassed. In this case the alleged improvement was, that the pump would allow the water to flow in a continuous stream, while the well, or spring, might be at a considerable distance from the operation. By the diagram exhibited, it appeared that an air-tight tank, called a treffos, was placed near or over the well into which the water flowed through a pipe, at the top of which was a valve to prevent its descent again into the well. From the tank, or treffos, another pipe communicated with the pump. As the piston worked, the water arose through the valve into the treffos, which formed a reservoir; it then flowed through the communicating pipe into the pump, where the water was poured out in a continuous stream. The inventor stated, in his paper, that he had had three of these pumps at work for some time. One of them had the pump at the distance of ninety yards from the treffos. Against this, Mr. Evans said the continuous stream had already been obtained by more simple means; while Mr. Adams characterised the treffos as nothing more than a continuation and enlargement of the supply pipe.

Mr. Henwood of Penzance described a series of experiments which he had made with the indicator, on the expansion of steam in the cylinders of some of the large pumping engines on the Cornish mines. The instruments employed consist of a small cylinder, of which the piston is kept in its place by a helical spring, and on the top of the piston-rod a pencil is placed on the cylinder's stand; a frame of wood, in which a board slides horizontally, being moved by a string connected with the radius rod of the steam-engine's parallel motion, and returned by a counterpoise, suspended from the slider, over a small pulley. On this board a piece of paper is fixed, and the pencil on the piston-rod of the indicator describes on it a curved line which denotes the pressure of steam in the cylinder of the steam-engine (and which elevates the piston of the indicator on its entrance from the boiler) at successive periods of the stroke. The first part of the curve thus generated by the composition of the motions of the slider and the piston is very irregular, and varies very much in different engines. This Mr. Henwood shewed to depend on the load of the engine, the pressure and quantity of steam in the boiler, and the size of the valve which admits it into the cylinder. The pressures of steam in the boilers varied from 15 to 65 lbs. on the square inch, above the atmosphere; and, owing to the peculiar construction of the Cornish boilers, there seems to be perfect safety in using such high pressures. The engines submitted to examination were at Huel Towan, Binner Downs, and East Crennis mines: their cylinders respectively 80, 70, and 76 inches in diameter; and the length of stroke 10 feet. The duty performed 53, 73, and 74 millions of lbs., lifted one foot high by the consumption of one bushel of coal; and 1085, 1006, and 870 tons, *lifted one foot high for the expense of one farthing.*

A long and animated discussion followed, in which J. J. Guest, Esq., M.P., Dr. Lardner, Mr. Webster, Mr. Adams, and many other gentlemen, took a part. In this it seemed to be stated the best, and indeed at present the only pumping-engines used in Cornwall, are Watt's single engines; and that those of this construction, which are employed to give rotatory motion, although in some places they have been long in use, and do much better duty than the double-acting engines employed for similar purposes, do not come up to the duty of the pumping-engines. It was said by Mr. Henwood, that those engines which work with a load varying not very greatly from 10 lbs. on the square inch, and working from 6 to 8 strokes per minute, appeared to perform more work with a given quantity of fuel, than similar engines under other circumstances.

Mr. John Isaac Hawkins exhibited a small marble bust, sculptured entirely by machinery invented by him, and improved by Mr. Cheverton. Mr. Hawkins stated that the machine, by which this exquisite work of art was copied from the antique, without a single touch from the artist, is a species of engine lathe, in which the bust to be copied, and the block of marble to be sculptured, are placed in a frame, capable of almost universal motion, so that the block to be cut may be applied in all directions to a cutter in the lathe, while all the parts of the model are brought successively in contact with an index, fixed at such a distance from the cutter, as are the corresponding parts of the model and of the block.

Mr. Russell, whose admirable observations on the resistance of waves in inland navigation have, during the last two years, excited so much attention, and supplied such a mass of new and useful information, explained the practical results of some of his later experiments, in a manner highly suitable to the character of this section, reserving more theoretical remarks for the Section of Physics on the following day. The title of his paper, he said, ought properly to have been "The mechanism of waves, in relation to steam vessels in shallow water;" and his present communication might be considered a supplement to those which he had before made. Mr. Robinson and himself had been requested to make a series of experiments on the subject; but in this section he should only have to deal with the practical application. The previous investigations which he had made related only to the manner in which the resistance of bodies moving in the water was affected by the waves which they created. It had been found that several species of waves were gene-

rated in shallow water. He called the first of these the great wave of translation, as it differed from all others in not being a proper wave, but a translation of one great body of water taking place with an equal velocity throughout the whole depth. This was generated by the motion of a body through the water. This part of his discourse Mr. Russell illustrated by the exhibition of several drawings. The first was of a vessel at rest, placed at a given degree of immersion in a fluid of certain depth. The next shewed that, by a motion of four miles per hour, an anterior wave was generated, the water accumulating before the bows and at the sides of the vessel. This wave, Mr. Russell said, consisted of the fluid which she displaced by her motion. If this motion were increased, the anterior wave was increased. One of the drawings represented an extreme case which he had witnessed, where, in a depth of five feet, the anterior wave had so accumulated by increased speed, that the posterior portion of the vessel was left in so little water, that her rudder was knocked off against the bottom. The effect of the anterior wave, which carried with it the whole body of the water at equal velocity to the greatest depth, was to raise the prow, which was more deeply immersed, and to depress the stern as it were into a hollow: thus she had the same difficulty to contend with as if pressing up an inclined plane, besides the pressure of water at the bows to get through. It was found, also, that this wave moved with a given velocity, which was in proportion to the depth of the fluid. When in a rectangular channel, four feet deep, the velocity of this wave had been found to be as much as eight miles an hour. The boat being stopped altogether, the wave continued to go on with a velocity of eight miles an hour; and he had himself followed a wave of this description for a mile and a half, and had seen no diminution of its velocity. It had been found that, if the vessel could be so propelled as to be placed through or on the top of this anterior wave, then, if she were so constructed as to balance herself in this position, the immersion of the stem was diminished, the sinking of the stern corrected, the resistance which was offered before was overcome, and she was borne along at greater speed. There were places where steam navigation, to a great extent, took place in shallow water: such were the Thames and the Clyde—and he might mention the Mersey; but he thought the water was generally rather deep there. Various methods had lately been suggested for the improvement of rivers; and it had struck him that he could not apply his investigation to better purpose than to the discovery of how far they might bear on that improvement.

The remainder of this exposition, however, is so connected with later explanations from from the same able source, that we are induced to postpone them, in the hope of being able to lay them before our readers altogether.

Mr. Fairbairn, called on by Dr. Lardner, said his experiments had been of a similar character to those of Mr. Russell. He had found with respect to the anterior wave, and those which were found in the wake of the vessel, that they were precisely similar to those described in Mr. Russell's diagrams. In one experiment which he had tried in the Union canal, which was five feet deep, they got to the speed of seven miles per hour, when the prow was raised as if the vessel were on an inclined plane, and the stern dragged against the bottom. There were many other curious phenomena attending his experiments. His experiments were made with a view to practical utility, and his notions agreed with those of Mr. Russell. He had thought that the width of the stream had something to do with the matter, but he was glad the experiments of Mr. Russell had set that at rest.

A question was put by Mr. Herapath, as to whether Mr. Russell thought there was any advantage in letting vessels fall away with a long sweep towards the stern, which led to a long discussion on the best form of vessels, but did not lead to any definite conclusion.

Mr. George Webb Hall said, he had observed that in walls which had been built sloping to resist the action of the waves, the waves from steam-boats had had a tendency to hollow them or restore them to a rectangular form; thus the waves themselves confirmed the accuracy of Mr. Russell's observation, that rectangular banks or walls possessed all the advantages he had described in navigation.

Mr. Kingly exhibited a model of a new description of drawing-board, which, as it contains most of the implements and instruments used in geometrical drawing, is calculated to facilitate work.

At five o'clock, about five hundred members sat down to a sumptuous and well-arranged dinner in Lucas's Rooms. At the close of which, the Marquess of Northampton (chairman) gave "the Queen," and other loyal toasts, which were drank with great applause. On proposing the health of the Earl of Burlington and prosperity to the British Association, the noble marquess alluded very happily to the close of his own reign, and the distinguished merits of his successor. The king never dies! Live the king! His noble friend, who bore the name of Cavendish and the title of Burlington, and inherits and represents the honours connected with them in the annals of science, he felt assured would discharge the duties he was now about to undertake in a manner which would be most advantageous to the Association. The toast was drunk with enthusiasm, and Lord Burlington returned his acknowledgments in a manner which amply justified the encomiums bestowed upon him, and the anticipation expressed of his reflecting credit upon the chair he was now called upon to fill.

The health of the Marquess of Northampton was also given with every demonstration of grateful regard for his past services; and his lordship, in return, with much good humour alluded to his approaching demise, and invited the company to the Amphitheatre to see him turned off.

General Evening Meeting.

At eight o'clock, the amphitheatre was crowded from floor to roof, and presented a very brilliant *coup d'œil*, both of *savans* on the stage, and fair spectators in the audience part.

The Marquess of Northampton said, in opening the business of the evening, that the members of the British Association entertained no fears as to the reception they would meet with in the town of Liverpool—a town whose very existence depended in a great measure on science—connected as it was with almost every branch of commercial pursuits—a town whose vessels navigated the ocean to every quarter of the globe—a town which beheld science giving wings to carriages, and propelling them with a speed rivalling that of the courser in the race, or the eagle in the clouds—a town which could not but feel the importance of science, not only to the world at large, but to itself in particular. The members of the British Association came here, not as Conservatives—not as Reformers—not as Episcopalians or as Dissenters—not as members of the Church of England, or of any other persuasion; but they came bringing with them the olive-branch of peace: they came to teach one single lesson alone in a religious and political sense, and a most important lesson it was, which was contained in two words of sacred origin, which were, "Love one another." Science had three great objects in view; the first was the exercise and improvement of those intellectual faculties which were given to man by his Maker; the second, was the praise and glory of that Creator, arising from the numerous—he should rather say, innumerable—proofs of his wisdom and beneficence, which were scattered all around; the third, was the duty which they owed to their fellow-creatures,—that of promoting their happiness and welfare in every possible way. It had been said by some persons that the Society held up science as a sort of idol to be worshipped; but the members entertained no such idea. They certainly believed science to be worthy of the noblest faculties of man, but they did not deny that other subjects had superior claims to their consideration. Though they had nothing to do with politics, they did not deny the importance of the science of government, which concerned the welfare of all—and God forbid that they should deny the superior importance of that knowledge which was to make them happy for ever. They excluded religion for two reasons—the first of which was, that their time and attention were so fully occupied, that they really were not able to take other matters into consideration. Of course, they entertained their individual opinions on these subjects—some were of one opinion, some of another: but in science they united on a neutral ground. As a neutral ground, he thought it most important, both politically and religiously, for he hoped it might be the means of softening those asperities which unfortunately prevailed both in politics and religion. It was, alas! too true, that the name of religion had been used by those who abused it for purposes to which it ought never to be applied, whilst, on the other hand, faction had usurped the sacred name of patriotism. His noble friend, who was about to relieve him from the arduous, but honourable, situation which he held as president of the Society, had said pretty nearly the same thing to-day; but he (the Marquess of Northampton) could not retire from his arduous post without acknowledging his great gratification at the kindness with which his humble efforts to promote the objects and welfare of the Association had been rewarded. He was about to be succeeded by one who was by family descent a philosopher, and who in early youth had exhibited a strong bias towards scientific pursuit. The visit to Liverpool would be a fresh era in the existence of the Society. This was the second great commercial town they had visited. Bristol being the first. The British Association felt extremely gratified by the kindness with which they had been received. He was extremely happy to see so large an assemblage of ladies, as well as gentlemen; and he could not refrain from expressing the satisfaction with which the British Association received the influence derived from the presence of the fairer portion of the creation, as they could not but be certain that fair eyes were the harbingers of fair deeds.

The Earl of Burlington, president elect, then took the chair, and was received with the warmest plaudits of the meeting. His lordship said it was impossible for him to enter on the duties of the situation, without endeavouring to acknowledge his deep sense of the honour

which had been conferred upon him,—both to the highly valued friends who had proposed him, and to the members of the Association in general, for acquiescing in their proposal. It was as high a distinction as was in the power of men of science, and, therefore, in the power of any body of men whatever, to bestow. But, however highly he estimated the honour of presiding over the assembled science of Great Britain, there was another consideration,—for if it were a post of honour, it was, at the same time, a post of difficulty and anxiety. They were now assembled in one of the great commercial cities of the empire; and both the theoretical cultivators of science, and those who had benefited so largely from its practice, would derive material pleasure and advantage from this meeting. When he found enrolled amongst the members of this Association, and saw around him all the most distinguished cultivators of science in this country, and was called upon to preside over men whom he had been accustomed to reverence as the highly gifted interpreters of nature, he could not but feel that he had great reason to ask for their liberal indulgence. He regretted to see that some distinguished members of the Association were absent. For the first time they were deprived of the presence of Mr. Parker, to whom, more than to any other individual, the Association was indebted. To him they owed the vigorous and powerful address, explaining the necessity and objects of the Association; to him they owed the health and vigour which it had now obtained. He regretted to add, that Mr. Parker was no longer officially connected with the Association. Another member was also absent—a distinguished philosopher, whose career of discovery had earned him a reputation second to none of the present day—he alluded to Dr. Dalton, whom they had congratulated at Cambridge, four years ago, in the distinction conferred upon him by his sovereign. He deeply regretted that the infirmities of increasing age no longer permitted Dr. Dalton to honour them with his presence. Some of the vice-presidents were also absent; but Mr. Whewell, to whom the Association owed a deep debt of gratitude, was here. The Association had commenced its seventh session that morning; and it could not be amiss to inquire what had been the fruits of the last six years, and how far the Association had answered the objects for which it was intended. Had this Association, or had it not, given a stronger impulse and direction to the progress of scientific inquiry? If they surveyed the whole circle of the sciences, they would find none which stood unindebted to this Association. It had afforded valuable assistance both to the past history and future progress of every department of science. To whatever quarter they turned, they found that not only had specific objects been pointed out, but that several were in the course of attainment. Astronomy, the most perfect of the sciences, in which was bestowed, almost exclusively, the specific inquiries of the last century, might be supposed to stand in no need of any assistance from the resources of the Association; but even in astronomy, at the instigation of this Association, government had undertaken to reduce the observations at Greenwich, which hitherto had remained perfectly useless in science. The subject of the tides had lately been taken up by two of the most distinguished philosophers of the present day, Mr. Whewell and Mr. Lubbock. This was a most inviting field for operations of the Association; and accordingly, they found that, by the aid of sums of money voted by the Association, valuable discussions on tidal observations had been effected, the result of which had already been made known to the Association. If they turned to other sciences, still struggling in their infancy, they found the Association actively engaged in the task for which it was peculiarly calculated, that of calling forth the energies of each. In meteorology and magnetism, much had been effected; from the valuable barometrical observations made at Plymouth, under the superintendence of Mr. Snow Harris, very valuable results had been obtained. The Association had also procured Professor Lloyd's and Captain Sabine's valuable thermometrical observations on the coasts of Scotland and Ireland. If they turned to geology, to natural history, or medical science, they found that in all, an activity, rightly directed, had been infused; and when such were the results of the last six years, they had good reason to believe that their prospects were highly encouraging. Such meetings as this were calculated to diffuse information more widely; but this was not the primary object of the Association, which was rather the progress and advancement of science than its dissemination. All found that they could minister something towards this great end, whilst the few leading minds which could aspire to become discoverers of the laws of nature, would here find assistance from the co-operative spirit of the Association. If they looked to the vast fields of nature, compared the small extent subject to the inquiries of man, with the vast dominion of which he was yet unable to grasp the laws, and considered the many powerful minds which were now endeavouring to unravel those laws,—they must be strongly convinced that the human mind was destined to acquire a far deeper insight into the laws of nature, than it at present possessed. But whatever the progress which science was destined to make in future generations, it was both his ardent hope, and his confident belief, that it would never engender high conceit in the mind of man as to his own faculties, but would lead all men to acknowledge submissively, the power and the goodness of the Almighty.

Dr. Traill then proceeded to read the report at great length, which, being finished, Mr. Taylor, the treasurer, read the report of the accounts for the last year ending the 31st July. The balance brought forward, was 607*l.* 13*s.* 3*d.*: received in the year compensation from 209 life members, 935*l.*; Subscriptions for 1836 of 1121 annual members, 1121*l.*; for the year 1837, 25*l.*; for the year 1835, 24*l.* making the amount of subscriptions for the last year, 2125*l.* They had received dividends on 4735*l.* stock, 135*l.*: for the sale of different volumes of the Association, 415*l.* 14*s.* 11*d.*; making the amount received on account of the Association, 3313*l.* 8*s.* 2*d.* The expenditure consisted:—Expenses various, 265*l.*; for the local treasurer's sundry disbursements, 135*l.* 14*s.*; purchase of 1000*l.* bonds 3 per cent, 800*l.*; salary of assistant secretary and accountant, 234*l.*; grants for scientific researches to the discussion committee on temperature, 97*l.* 10*s.*; for the present year, 186*l.* 11*s.*; tidal observations at Bristol, 150*l.*; for researches in lunar observations, 70*l.*; for the committee for meteorological observations, 93*l.* 10*s.*; researches on the form of waves, 100*l.* 12*s.*; experiments on the sounds and motions of the head, 8*l.* 4*s.* 6*d.*; researches with respect to atmospherical air, 11*l.* 18*s.* 6*d.*; for barometrical observations, 50*l.*; thermometrical observations, 150*l.*: chemical experiments, 24*l.*; making various payments, 372*l.* 12*s.* 4*d.*; for printing reports of fourth volume, 536*l.* 11*s.*; abridging reports, 52*l.*; sundry printing and advertising, 41*l.*; balance in the hands of the treasurer, 248*l.*; making up 3318*l.* 8*s.* 2*d.* which, altogether, would leave the present prosperity of the Society previous to the meeting at Liverpool, at about 5000*l.* He begged to mention, that, at the close of the meeting at Bristol, the number of tickets issued, was 1305. When he left the Townhall that day at twelve o'clock, the number then issued, was 1412. That number seemed likely to be largely increased, and the funds of the Society seemed likely to receive here a large addition.

POSTSCRIPT.

Liverpool, Thursday Evening.

HAVING, with the exception of two or three papers, and Dr. Traill's Report (which, we presume, will be published at length), given the principal details of the meeting, not only to the conclusion of the first day's proceedings, but with several interesting additions from after days, we shall subjoin a few particulars and observations which have occurred to the above date.

The principal subject which seems to have attracted the greatest notice and discussion, during the week, has been the manufacture of iron, in which many of the commercial, as well as of the philosophical, portion of the Association appear to have considerable interest. In one Section, the Mechanical, this topic has been investigated in various mechanical relations; and, to-day, the Chemical Section has been entirely occupied with it, after a very able report from Dr. Thomson, of Glasgow, in which he detailed a variety of experiments conducted with admirable skill and accuracy. This investigation of the same matter in different Sections is not a little perplexing to the reporter; and we feel that it will not be in our power, till the whole is closed, to take any thing like a complete view of any of the leading and most important questions. The same remark applies to the theories of tides and experiments on the resistance of fluids, &c.; also of much consequence to a vast number of the Association. These have been expounded in the Physical and Mechanical Sections; and it is as yet impossible to understand the results, which are, indeed, still undergoing examination. The same may be said of the fertile theme of education and other statistical inquiries, where the field is so vast, that volumes could not contain the accumulated data.

To-day the Zoological Section has flown on an excursion to the Earl of Derby's fine zoological collection at Knowsley, after having yesterday pretty well exhausted the interesting subject of Mr. Ward's preservation of plants under glasses, nearly, or altogether excluded from the air. This curious discovery, renders it easy to transport the plants of every climate to other regions. They exist by their own action in expiring oxygen and moisture, which they again and again re-absorb, and thus live for months or years without water or culture. Dampness, as Mr. Lindley, who read Mr. Ward's memoir, observed, was more dangerous than even excessive dryness; and instances were quoted, of many plants flourishing, flowering, and seeding, under these circumstances. It seems probable that the colouring matter in them does not reach perfection; but, in other respects, they are equal or superior to plants in the open air. The lower orders thrive best, but even vascular specimens succeed in growth and health.

A young gentleman in this Section gave an

account of one of three swallows taken out of solid ice (in November, in Germany), and restored to life by the heat of the hand. This accident led to a long conversation; but nothing transpired to induce an opinion, that the laws of nature were inverted as regards the swallow tribe, or to confirm the vulgar notion, that these birds continue to exist and hybernate under water.

It is not easy to afford an idea of the Geological Section. A young science, and always developing new features, its proceedings would of themselves be sufficient to bring together the more idle and curious of the assembly;* but when we add, that the gallery is appropriated to, and filled by ladies; and that the chair is occupied by Mr. Sedgwick, we have intimated to all acquainted with the subject, that the combination, or aggregation, of attractions is irresistible. The wit and humour with which the president gilds the graver labours of science, are of the very essence of popularity. This morning, for instance, for the common cry of "*places aux dames*," he made a laughable appeal to such gentlemen as happened to occupy some of their front seats; which drove the intruders back, amid bursts of mirth, in which every person in the theatre joined. The tolerated nuisance being abated, a brief paper, by Sir D. Brewster, was read by Sir Philip Egerton, in which a new property of the *diamond* was not merely indicated, but almost demonstrated.

The fact connected with this is the most striking and original we have heard during the week. Whilst pursuing some of his beautiful experiments on light with diamond lenses, this acute observer found that the stone was variegated with lines of unequal structure and refraction. These lines appeared on the drawing to be parallel, and running quite across the disc; and, from this appearance, Sir David immediately suggested that *the diamond was a vegetable substance*. Indeed, there is very little doubt but that, as coal is vegetable, so is also this pure crystal of carbon. Nothing but the process of its crystallisation can explain the property here noticed and described.

The coal fields of Lancashire filled the rest of the day.

In the Mechanics, yesterday, the debates were rather stormy, and some of Dr. Lardner's remarks touching steam navigation, provoked warm opposition. This will, no doubt, be revived, as opinions are much diversified on the question of fuel, &c. necessary for the accomplishment of distant voyages.

At three o'clock the general committee meet to determine on the place of assembling next year; and we shall keep our packet open to communicate the determination, if in time, without troubling the public with the discussion, which is expected to be somewhat complicated.

Birmingham and Newcastle are the competitors, and the latter looks like the favourite; but we hear there is a little perplexity in consequence of two presidents having been spoken of: to wit, the Duke of Northumberland and Lord Durham. Either of these are most eligible, and, perhaps, it may be arranged (if Newcastle be selected) to enrol them both, the duke as president, and the noble earl as vice-president, to take an active part at the head of the proceedings. We shall, however, know in a few hours; and we have only to repeat that, to the present moment, every thing has gone off most liberally and satisfactorily.

* The Statistics Section is, in some respects, also, the resort of the more general body of inquirers.

To maintain the high character of Liverpool for spirit and hospitality, the corporation, after some debate as to legal forms, granted 200*l.* to Mr. Earl, the mayor, for expenses in entertaining the Association. A voluntary subscription, amounting to about 1100*l.*, was raised in furtherance of the same object, in various ways and places; and at the same time the hospitality of private individuals, particularly the local secretaries, treasurer, council, &c. &c. has been unlimited. Above 600 members belonging to Liverpool have also been enrolled, and on Wednesday afternoon the total number amounted to above 1720, or 400 more than ever met on any former occasion.

Among the other beneficial effects of these meetings, we may mention that a Statistical Society is likely to be formed in Liverpool under the auspices of Lord Sandon; and an ordnance map of Scotland, similar to the splendid one of Ireland, is to be begun next year by order of government.

Among the other civilities so largely shewn to the members of the British Association at Liverpool, the following places and objects have been thrown open to them for inspection or relaxation:—

Institutions.—Royal Institution; Athenæum Library and News-room; Lyceum Library and News-room; Exchange News-room; Union News-room; School for the Blind; School for the Deaf and Dumb; Blue-Coat Hospital; Workhouse; and the Infirmary.

Public Commercial Buildings.—New Custom-house; Tobacco Warehouse, King's Dock; Telegraph Station; Chain-Cable Testing Machine.

Churches and Monuments.—St. George's—Stained Glass Window; St. James's Cemetery, with Chapel and Huskisson's Monument.

Painting and Sculpture.—Statuary at Charles Blundell's, Esq. Ince, on application to Samuel Turner, Esq., the local treasurer, and one who has shewn abundant hospitality to very many of the members.

Gardens.—Botanic Garden; Mr. R. Harrison's Collection of Plants.

Manufactories.—Liverpool and Manchester Railway Stations and Work-shops; Gas Works; Fawcett and Preston's Foundry and Steam Engine Manufactory; G. Forrester and Co.'s Foundry and Engine Manufactory; Bury and Brancker's Clarence Foundry and Locomotive Engine Manufactory; Logan's Chain-Cable Manufactory; Lyon's Stained Glass Manufactory, and Wax Busts; Union Crown-Glass Company's Works; Muspratt's Chemical Works, at Newton and Liverpool.

Ship-Building Yards.—Messrs. Humble and Milchrest's Steam Ship; Mr. Laird's large Iron Steam-vessel.

Excursions—Earl of Derby's Zoological Collection and Picture Gallery, Knowsley; Salt Mines, Northwich; Rock Lighthouse and Fort; Worsley Collieries and Tunnels; and, through the kindness of the Rock Ferry Company, a swift steam-boat has been placed at the disposal of the Meeting for the purpose of an excursion.

Also, the Town Hall, with Chantrey's Statue of Canning, and View from the Dome; Nelson's Monument, Exchange; St. John's Market; the Docks; American Packet Ships; Necropolis; Zoological Gardens (admission, one shilling); Annual Exhibition of Pictures (admission, one shilling); Remains of the Submarine Forest and Embankment, Leasowes; Remains of Submarine Forest, Crosby.

The president and members of the Liverpool Academy also liberally offered to light up their exhibition rooms on Friday evening, and to admit members and their ladies at seven o'clock on shewing their tickets; and an invitation from manufacturers at Manchester offered their works, &c. to be seen by any members of the Association. We did not hear that the railroad directors had offered any facilities for transit, which rather surprised us.

General Committee.

Five o'Clock.—The minutes of the preceding meeting having been read by Mr. Phillips and confirmed:

The applications from Newcastle, the Corporation, Coal-owners, Literary and Philosophical Societies, the Bishop of Durham, &c. &c. were read by Mr. Murchison.

2d. From Birmingham.

3d. From Sheffield.

4th. A verbal communication from Manchester, requesting that the application from that town should be kept on the books.

5th. From Cheltenham.

The claims of Newcastle were urged by Professors Johnstone of Durham, and other gentlemen; those of Birmingham by the low bailiff and Mr. Corrie (the latter in a very impressive address), and the other places by other deputies, when it was moved and carried that the next meeting should be at Newcastle.

It was afterwards moved and carried, that the

Duke of Northumberland should be President.

Lord Durham, the Rev. Vernon Harcourt, and Prideaux Selby, Esq. of Twiser (the distinguished naturalist) Vice-Presidents.

J. Adamson, W. Hutton, Esq. and Professor Johnstone, Local Secretaries.

Rev. W. Turner and J. Bigge, Esq., Local Treasurers.

REVIEW OF NEW BOOKS.

The Vicar of Wrexhill. By Mrs. Trollope, author of "Domestic Manners of the Americans," "Tremordyn Cliff," &c. 3 vols. 12mo. London, 1837. Bentley.

THIS is certainly the best novel that Mrs. Trollope has produced, as regards dramatic execution or developement of character. It is the history of a modern *tartuffe*, and shews how the highest and best feelings of our nature may be turned to evil by evil guidance, and by misdirected enthusiasm. The more deeply we are impressed by the great truths of Christianity; the more that we feel they are the safeguard of life, and the hope of death; the more should we guard against the delusions of fanaticism, for the fanatic and the hypocrite are inseparable companions. We firmly believe that the exaggerating and self-righteous saint does more harm to the cause of religion than even the infidel. The falsehood and coldness of disbelief must, sooner or later, find their own insufficiency; but the small vanities, shrouded under the sweeping condemnation of others; the horror wasted on trifles, which should be kept for graver offence; and the severity so contrary to the Gospel,—all these are so calculated to excite disgust and ridicule, that religion is confounded with, and injured by, those who indeed take its name in vain. Mrs. Trollope has drawn a picture of such a state, with much force and point—our only objection is, that there are some portions too coarsely coloured. For example, the scene which leads to Helen's leaving her mother's house, is decidedly objectionable. No taste can be too fastidious when we consider the class of readers among whom works like the present chiefly circulate. We now proceed to give a scene among the "regenerated," which, however mistaken and absurd, is only too faithful.

"A few minutes more brought them to the door of Mrs. Simpson's. Their inquiry for the lady was answered by the information that she 'was schooling Miss; but if they would be pleased to walk in, she would come down directly.' They accordingly entered the drawing-room, where they were kept waiting for some time, which was, indeed, pretty generally the fate of morning visitors to Mrs. Simpson. The interval was employed as the collectors of albums and annuals intend all intervals should be, namely, in the examination of all the morocco-bound volumes deposited on the grand round table in the middle of the room, and on all the square, oblong, octagon, and oval minor tables, in the various nooks and corners of it. On the present occasion, they

seemed to promise more amusement than usual to the party, who had most of them been frequently there before,—for they were nearly all new. Poor little Fanny, though she knew that not one of those with her were capable of enjoying the intellectual and edifying feast that almost the first glance of her eye shewed her was set before them, could not restrain an exclamation of 'Oh! how heavenly minded!' The whole collection, indeed, which, though recently and hastily formed, had evidently been brought together by the hand of a master of such matters, was not only most strictly evangelical, but most evangelically ingenious. Helen, however, appeared to find food neither for pleasantry nor edification there; for having opened one or two slender volumes, and as many heavy pamphlets, she abandoned the occupation with a sigh, that spoke sadness and vexation. Miss Cartwright, who had seated herself on the same sofa, finished her examination still more quickly, saying, in a low voice, as she settled herself in a well-pillowed corner,

'Surfeit is the father of much fast.'

Miss Torrington and young Mowbray got hold of by far the finest volume of all, whose gilt leaves and silken linings shewed that it was intended as the repository of the most precious gifts that, according to the frontispiece, genius could offer to friendship. Having given a glance at its contents, Charles drew out his pencil, and on the blank side of a letter wrote the following catalogue of them, which, though imperfect as not naming them all, was most scrupulously correct as far as it went:—

'Saint Paul's head sketched in pen and ink;
'Here's the bower,' to words of grace;
The death-bed talk of Master Blink;
Lines on a fallen maiden's case;
Sonnet upon heavenly love;
A pencil drawing of Saint Peter;
Emblems—the pigeon and the dove;
Gray's Odes, turned to psalm-tune metre.
A Christian ode in praise of tea,
Freely translated from Redi.'

He had just presented the scrap to Rosalind when Mrs. Simpson entered, leading her little girl in her hand; but the young lady had leisure to convey it unnoticed to her pocket, as the mistress of the house had for the first few minutes eyes only for Fanny. In fact, she literally ran to her the instant she perceived her little bonnet; and folding her arms round her, exclaimed—'My dear, dear child! My dear, dear sister! This is providential! It is a blessing I shall remember alway! Our minister told me I should read at a glance the blessed change wrought upon you: I do read it, and I will praise the Lord therefore! I beg your pardon, ladies. Mr. Mowbray, pray sit down—I beg your pardon: I rejoice to see you, though as yet——' Her eyes fixed themselves on the bonnet of Rosalind, which, besides being large, had the abomination of sundry bows, not to mention a bunch of laburnum blossoms. 'Ah! my dear Miss Helen! The time will come—I will supplicate the Lord alway that it may—when you too, like your precious sister, shall become a sign and ensample to all men. How the seed grows, my sweet Miss Fanny!' she continued, turning to the only one of her guests whom, strictly speaking, she considered it right to converse with. 'How it grows and spreads under the dew of faith and the sunshine of righteousness! It is just three months, three little blessed months, since the beam first fell upon my heart, Miss Fanny; and look at me, look at my child, look at my albums, look at my books, look at my card-racks, look at my missionary's box on one side, and my London Lord-days' society box on the other. Is not this a ripening and preparing for the harvest, Miss Fanny?' Fanny coloured, partly, perhaps, from pride and pleasure; but partly, certainly, from shyness at being so distinguished, and only murmured the word 'Beautiful!' in reply. Miss Mowbray felt equally provoked and disgusted; but, while inwardly resolving that she would never again put herself in the way of witnessing what she so greatly condemned, she deemed it best to stay, if possible, the torrent of nonsense which was thus overwhelming her sister, by giving another turn to the conversation. 'Have you seen Mrs. Richards lately, Mrs. Simpson?' said she. 'Mrs. Richards and I very rarely meet now, Miss Mowbray,' was the reply. 'The three young ladies, indeed, I am happy to say, have wholly separated themselves from their mother in spirit, and are all of them becoming shining lights. Oh, Miss Fanny! how sweetly pious are those lines written between you and little Mary!' Fanny suddenly became as red as scarlet. 'The alternate verses, I mean, in praise and glory of our excellent minister. He brought them to me himself, and we read them together, and we almost shed tears of tender blessing on you both, dear children!' Charles, who thought, and with great satisfaction, that whatever stuff his poor little sister might have written, she was now very heartily ashamed of it, wishing to relieve her from the embarrassment which, nevertheless, he rejoiced to see, rose from his chair, and, approaching a window, said, 'What a very pleasant room you have here, Mrs. Simpson; it is almost due east, is it not? If the room over it be your apartment, I should think the sun must pay you too early a visit there unless your windows are well curtained.' 'Oh, Mr. Mowbray! Sunrise is such a time of praise and blessing, that, even though the curtains are drawn, I always try, if I am awake, to think how heavenly it is looking outside.' 'Are you an early riser, Mrs. Simpson?' said Helen. 'Not very,—at least, not always; but since my election I have been endeavouring to get down to prayers by about half-past eight. It is so delightful to think how many people are coming down-stairs to prayers just at half-past eight!' 'Your little girl is very much grown, Mrs. Simpson,' said Miss Torrington, willing to try another opening by which to escape from under the heels of the lady's hobby; but it did not answer. 'Hold up your head, Minima, dear,' said the mamma; 'and tell these ladies what you have been learning lately. She is still rather shy; but it is going off, I hope. Precious child! she has grown such a prayerful thing, Miss Fanny, you can't imagine. Minima, why did you not eat up all your currant-pudding yesterday? tell Miss Fanny Mowbray. 'Because it is wicked to love currant-pudding,' answered the child, folding her little hands one over the other upon the bosom of her plain frock, no longer protruding in all directions its sumptuous *chevaux-de-frise* of lace and embroidery. 'Darling angel! And why, my precious! is it wicked?' 'Because it is a sin to care for our vile bodies, and because we ought to love nothing but the Lord.'"

A Blunder in furnishing a Religious Library.—"But we were once very near getting a book, which, I have been told, is of the most exquisite interest and pathos of any in the language, by a pleasant blunder of Mrs. Mowbray's. I chanced to be in the room with her one day, when she read aloud an old advertisement which she happened to glance her eye upon, stitched up in a Review of some dozen years' standing, I believe, 'Some Passages in the Life of Mr. Adam Blair, Minister of the Gospel.' 'That's a book we ought to have,' said she, very solemnly; 'Rosalind, give me that list for Hatchard's, I will add this.' I took up the advertisement as she laid it down, and, not having it before her eyes, I suspect that she made some blunder about the title; for, when the box came down, I took care to be present at the opening of it; and, to my great amusement, instead of the little volume that I was hoping to see, I beheld all Blair's works, with a scrap of paper from one of the shopmen, on which was written, 'Mrs. Mowbray is respectfully informed, that the whole of Blair's works are herewith forwarded; but that J. P. is not aware of any other life of Adam than that written by Moses.'"

There is a very lively sketch of a "serious fancy-fair;" but we must content ourselves with a brief description of the *serious pincushions*:—

"By far the greater half of these articles were pincushions, and, for the most part, they packed and unpacked well and safely; but, amidst the vast variety of forms into which this favourite vehicle of charity was turned, some among them were equally ingenious in design, delicate in execution, and difficult of carriage. There were harps, of which the strings were actually musical, and the foot a pincushion. Old women of pasteboard, washing their feet in a pasteboard tub; but with knees stuffed for pincushions. Pasteboard hunchbacks, the hunches being pincushions. Babies dressed with the nicest taste and care, their plump little necks and shoulders forming pincushions. Pretty silken volumes, lettered 'pointed satires,' and their yellow edges stuffed for pincushions. Ladies very fashionably dressed, with the crowns of their bonnets, and their graceful backs, prepared as pincushions. These, and ten thousand more, of which a prolonged description might probably prove tedious, formed the staple commodity of the elegant booths, which stretched themselves in two long rows from one extremity of the beautiful lawn to the other."

These are but follies for laughter; but Mrs. Trollope has drawn a grave and sad picture of how doubt springs up from hypocrisy; and of the fatal disunion among friends and families engendered by this self-seeking spirit of over-sanctity. Henrietta Cartwright is a vigorous and original sketch; but about true religion there can be no mistake—by its fruits shall ye know it. The spirit of Christianity is kindliness, and its basis is charity.

ARTS AND SCIENCES.

RETURN OF CAPTAIN BACK.

THE welcome intelligence of the safe return of Captain Back and his crew, after an absence of fifteen months; during which they were exposed to hardships and dangers almost unparalleled; and the deep interest felt by the public in the fate of this gallant officer and his intrepid crew, will cause the following authentic account of the voyage, which we have the gratification to lay before our readers, to be received with great interest.

We need hardly premise, that H. M. S. Terror, strengthened and prepared in every way for encountering the ice, sailed from England in June 1836, with the intention of proceeding to Repulse Bay, or Wager Inlet, on the north-western shore of Hudson's Bay;—thence an exploring party was to cross over the supposed isthmus to the Arctic Sea, with the hope of coasting along, and determining the outline of the northern shores of America. The following letter will shew that the physical obstacles

that opposed themselves to this undertaking were utterly insurmountable.

To the Secretary of the Geographical Society.
September 11, 1837.

Sir, — As the expedition, from which I have just returned, originated with the Geographical Society, and at its recommendation, was most liberally carried into effect by his majesty's government, I feel it incumbent on me to offer to the Society an outline of the principal events which occurred, from the time of my quitting England, in June 1836, till my return to Lough Swilly, on the night of Sunday, the 2d instant.

In a statement of this description, it would be impossible to enter into the detail of all the extraordinary, and I may say unparalleled, circumstances which have marked the course of the whole of our proceedings: such details I trust I may shortly be enabled to afford to the Society and to the public in a more complete form, but, in the mean time, it is due to those who took so warm an interest in the expedition, to furnish them with an authentic narrative of the voyage, which must, however, necessarily be very brief, and will consist of extracts selected from my daily journal, as better calculated to convey a correct impression of the singular occurrences to which we were witnesses.

June 23. We took our departure from Papa Westra, and steered across the Atlantic: the weather stormy. — July 20. We fell in with the ice, and, on the following day, we first saw the coast of Labrador, near Cape Chudleigh.— Aug. 1. Passed through Hudson's Straits; and, on the 5th, saw some of the company's ships, apparently beset with ice, off the North Bluff. By keeping close in with the land, we got a-head, and lost sight of them; and, on the following day, we were ourselves hampered. The ice was compact, and covered the horizon towards Hudson's Bay, as far as could be seen from the mast-head, while to the north-west it presented a contrary appearance. I had, therefore, no hesitation in proceeding in that direction. — Aug. 16. We got a run of forty miles from Trinity Isles; yet did not get sight of Baffin Island till the 23d, when we also saw Southampton Island to the S.W. Two days of westerly wind at this crisis would have enabled us to reach Repulse Bay; but easterly winds prevailed, and packed the whole body of ice in such a manner, that all hope of retracing our steps to pass to the southward of Southampton Island, and up Sir Thomas Roe's Welcome, was out of the question. On the 29th we were drifted by the ice to lat. 65° 50′ N., long. 82° 7′ W.: this was our extreme north point, and here we were within about forty miles of Winter Island, where the Hecla and Fury passed the winter of 1821. By dint of wearing, the ship was worked to the southward towards Southampton Island, whither we were attracted by the flattering appearance of lanes of open water.—Sept. 4. We were only 136 miles from Repulse Bay, and two days of strong breeze would have led us through Frozen Strait to our destination. During the next fortnight we continued drifting slowly to the westward, passing within three miles of Cape Comfort, a bluff headland, rising about 1000 feet above the sea. — Sept. 20. We were seriously nipped by the ice; so much so as to start some of the ship's fastenings. On the 22d, being within twenty-five miles of the Duke of York's Bay, we tried to cut through the ice, but found it impracticable, as it closed immediately. From this date the ship was no longer under our own guidance; but, being closely beset, was carried to and fro, according to the wind and tide.— Sept. 26. We were drifted into lat. 65° 48′, long. 83° 40′, our extreme western point, and ninety miles from Repulse Bay. — Sept. 27. A rush of ice from the eastward lifted the ship's stern 7½ feet out of the water. Constant easterly winds. — Oct. 9. A clear channel in shore as far as Cape Bylot, for the space of twelve hours, and again on the 27th; but we were so completely frozen up, we could not take advantage of it; although, to effect so important an object, the ice-saws, axes, and every other implement, so liberally supplied by government, were put in requisition, and all the energy of both officers and crew was strained to the utmost. —Oct. 17. The thermometer fell to 9° below zero of Fahrenheit. In the beginning of November, the ship was housed in, and every arrangement made for meeting the rigour of winter. Snow walls were raised round the ship; and in this manner we drifted to and fro off the high land of Cape Comfort, at times carried so close to the rocks as to excite alarm for the safety of the ship.—Dec. 21. A furious gale from the westward drove us off shore, fourteen miles to the eastward of Cape Comfort, from which point the coast, not before laid down on our chart, was surveyed as we drifted to the south-eastward, for the distance of about 120 miles, as far as Seahorse Point, the eastern extreme of Southampton island. The general character of the coast, barren hills and cliffs, varying from 750 to 1000 feet above the sea. On Christmas-day, the first symptoms of scurvy shewed themselves, which gradually extended itself to all hands. At one time twenty-five men were suffering severely from it; but, eventually, only three persons fell victims to this dreadful disease; viz. the gunner and two seamen. In the beginning of January, during a calm, our floe of ice split with a fearful crash; and this was the commencement of a series of shocks, that nothing but the great strength of the mass of timber and iron employed in fortifying the ship could have withstood: as it was, the vessel strained in every direction.—Feb. 18. Early in the morning, thermometer at 33° below zero, a disruption of the ice took place; and waves of ice thirty feet high were rolled towards the ship, which complained much. The decks were separated, the beams raised off the shelf-pieces. Lashings and shores, used for supporters, gave way; iron-bolts partially drawn; and the whole frame of the ship trembled so violently, as to throw some of the men down.

Yet this was not our worst disaster. On the 15th March, while drifting to the south-eastward, off a low point, since appropriately named "Terror Point," a tremendous rush of ice from the north-west took the ship astern; and although buried to the flukes of the anchor in a dock of ice, such was the pressure, that she was forced upon it, and at the same time thrown over to starboard. The sternpost was carried away, and the stern lifted seven feet out of the water. The same night a second rush of ice tore up the remnants of our floe, forced the ship on the ice, so that her forefoot was quite out of water. Her sunken stern was threatened by an overhanging wave of ice full thirty feet high; but which providentially stopped as it touched the quarter of the ship. The water poured in through the stern-frame, and the ship creaked and strained in every direction. Provisions were got on deck, the boats lowered, and every preparation made for the worst extremity; and in the darkness and silence of night, we calmly awaited the anticipated coming of another shock, which, to all human appearances, must have been the last. Heaven ordained it otherwise; and in this novel cradle of ice, we were drifted without further injury to Seahorse Point. The ice that bore us was ascertained to be seventy-feet thick; and it was not until we had sawed through long lines of twenty-five feet thick, at a future day, that the ship was freed from this situation. The position of Seahorse Point was determined to be 63° 43′, long. 80° 10′ W.; variation 49° westerly. The lowest temperature was 53° below zero, when both mercury and brandy were frozen.

On the 1st of May the ship, still on the ice, was drifted near Mill Island; thence to the southward of Nottingham Island, between it and Cape Wolstenholme, a perpendicular cliff of 1000 feet high; thence to the northward of Charles' Island, which we reached on the 21st of June. The ice now shewed symptoms of disruption, and we set all hands to work, with a 35-foot ice-saw worked by shears; and on the 11th of July, having sawed to within three feet, the ice split in a fore and aft direction, and liberated the larboard side. We immediately made sail on the ship, but found we could not extricate her from an iceberg between the fore and main chains. We again had recourse to saws and purchases, when the lump of ice, still fast to the ship, rose to the surface of the water, and threw the vessel on her beam ends, the water rushing in with frightful rapidity. All hands were instantly set to work again, and laboured day and night, unremittingly, at the fatiguing but indispensable operation of sawing; till, exhausted by their exertions, I was obliged to call them in from the ice for rest and refreshment. Not a quarter of an hour had elapsed from quitting the work, when a sudden disruption of the ice took place, and the mass crashed with terrific violence against the ship's side, snapping, apparently without effort, the lashings and spars that had been placed fearing this occurrence; and, but for the merciful interposition of Providence, all would inevitably have been crushed by the mass of ice on which they had just been labouring. As the ice separated the ship righted, and drifted along. Finding it impossible to hang the old rudder, a spare one was fitted, and sail made on the ship. It was an anxious moment, as we waited to see if she would answer her helm; and as she bore up before the wind, with her head towards England, a cheer of gratitude burst from all on board.

I had cherished, to the last moment, the hope that the damages sustained might not be so great as to prevent my pushing for Wager Inlet by Sir Thomas Roe's Welcome, and there to beach the ship and repair damages, while some in boats carried into effect the object of our expedition; but when I found that she required two pumps constantly going to keep her free, that both outer and inner sternposts were gone, the keel seriously damaged, besides various other casualties, I felt it became my duty, however reluctantly, to make the best of our way homewards. Fortunately, the early part of our passage across the Atlantic was favourable; but, subsequently, the weather became boisterous, and the leaks increased very much, so that we could barely keep her free with incessant pumping: to secure the ship, also, we were obliged to frap her together with the stream chain-cable.

On the 6th of August, we again passed through Hudson's Straits; and on the 3d of September arrived in Lough Swilly, not having let go our anchor since June 1836. The north-eastern stem of Southampton Island has been now surveyed, for the first time, by Lieut. Owen Stanley, who has also made various views of the coast, and a chart shewing

the track of the ship. The remarkable positions in which the ship was placed among the ice, are admirably illustrated by Lieut. Smyth, in a series of spirited and characteristic drawings. I cannot conclude this brief account without bearing testimony to the great assistance I have invariably received from Lieut. Smyth, and all the officers and crew employed under my command, in this expedition; to the cheerful obedience with which all orders were obeyed; and to the steadiness of behaviour evinced in circumstances of no common trial. To speculate on what might have been the result of this expedition, had ever I reached either Repulse Bay or Wager River, would now be idle; but I cannot resist the opportunity of recording my unaltered opinion as to the practicability of the service when once a party should have reached either of the beforementioned starting places.

I have the honour to be, &c.

GEORGE BACK.

To CAPTAIN WASHINGTON, R.N.
Secretary R.G.S.

FINE ARTS.

Portrait of Her Majesty. By A. E. Chalon, Esq. R.A.

WE have so frequently had occasion to express our admiration of Mr. Chalon's taste and talents, that when we say we consider the work under our notice as, in every sense of the expression, his *crowning* effort, our readers will easily conceive that it must be a very attractive performance. It is a whole-length portrait, in water-colours, *debout*, of our youthful, gracious, and beloved sovereign, attired in the regal robes and jewels in which she appeared on dissolving the Parliament, and it presents a charming union of queenly dignity, and feminine delicacy and beauty. The countenance is exceedingly animated; the sparkling eyes, and the "lips apart," conveying the impression that her Majesty is in the act of speaking. Without any actual increase of the height of the figure, Mr. Chalon has contrived to give an appearance of additional stature, by placing the queen on an elevated platform, covered with white drapery; round the steps that ascend which the massy folds of the crimson-and-gold royal train gracefully wind, seeming to afford a firm and extended basis for the light and elegant structure above. The broad blue riband which crosses the breast, and to which the George is suspended, by the contrast of its cool colour, imparts additional splendour to the warm and rich tones of the robes and jewels. All the accessories of the picture are well introduced: especially the British lion, in bas-relief; the sculptured *fasces* partially veiled, in happy allusion to the amiable clemency of her Majesty's character; and some white roses peeping over a magnificent balustrade, emblematic of the spotless purity of a "virgin queen." This fine picture, which was painted expressly by royal command, is now in the possession of Mr. Moon, of Threadneedle Street; but we understand that it will be immediately placed in the hands of Mr. Cousins, whose skill as a mezzotinto engraver is well known; and who, no doubt, will exert himself to the utmost to render the plate his *chef-d'œuvre*.

DRAMA.

Haymarket.—Since our last, Mr. Phelps has attempted to play the part of *Hamlet*,—we regret to say the attempt has been an utter failure; incorrect as to reading—misconceived, and some words mispronounced. We feel sure this gentleman will yet take his place on the London boards as a most respectable and useful actor; but it is in the mean time painful to behold him struggling to maintain himself in a position he is totally incapable of filling.

On Thursday, in *Othello*, Mr. Phelps was far more successful. In the early parts of the play, the soft and gentle passages, his truly fine voice and quiet style of acting were seen to more advantage than they have before been; but towards the end, the want of energy which we have already noticed was evident; and, consequently, in the last scene, every character seemed of more importance than *Othello*. Mr. Elton played *Iago* exceedingly well for Mr. Elton, who is certainly not quite first-rate. Miss Allison was a sweet and gentle *Desdemona*, and Miss Huddart one of the very best *Emilias* on the stage. Power continues to play to full houses.

English Opera.—An extravaganza, called *The Spitfire*, was produced at this house on Wednesday. After a bad opening scene, in which the waiter of an hotel speaks as no waiter ever did speak, and which, or, at least, part of which, scene might be omitted with advantage, the piece becomes more lively and bustling. There are many *quaintnesses*, and some good scenery in it, which, joined to the clever acting, may, when properly curtailed, render this trifle amusing for half an hour.

VARIETIES.

Count Borolowski, the celebrated Polish dwarf, died a few days since near Durham, where he had resided many years. He was a little under three feet in height, and within a little of a hundred years of age. Upon the principle of proportion, a man of six feet should live to be near two hundred years old; but length of days is not accorded according to length of legs. The count was exceedingly well made, and of an agreeable countenance. He married, we believe, a lady of the usual size, and, indeed, we remember to have heard, in our early days, of her setting him on the chimney-piece, in cases of conjugal dispute, till he promised greater obedience, was kissed, and lifted down.

Weather-Wisdom.—The weather during the past week has verified the prediction. We proceed: "The 18th and 19th unsettled—showers at times, with gusts of wind. The air colder as the sun draws near the aspect of Saturn. The 22d cold, with rain and heavy atmosphere."

Mr. Macrone.—In our last we noticed the deaths of two publishers of eminence, and have now to record the decease of Mr. Macrone, another enterprising individual of the same class, at the early age of twenty-eight. Mr. Macrone's health had rapidly declined during the last few months, and a fine-looking and apparently healthy man, was thus prematurely hurried to the grave.

Vauxhall has closed its ballooning season, and, if it has not been a monstrous profitable one, it has not been the fault of the monster balloon. Shakespeare tells us that the air has its bubbles, and this is the biggest bubble of them all.

Hurricane in the West Indies.—Another dreadful hurricane has devastated Barbadoes and other West India islands. For several days after the 26th of July, the wreck of vessels and the destruction of life and property on shore, have been appalling.

Tempests.—Among the violent storms which have this season visited various parts of the continent, late accounts from Moldavia and Wallachia state that a frightful tempest had ravaged these provinces. In Wallachia, a train of sixty-four carts of salt had been swallowed up, and a hundred persons destroyed.

The Thames Tunnel.—It gives us pleasure to hear, that the breach lately made in the tunnel has been closed, that the water has been expelled, that it appears the shield has suffered no injury, and that there is every prospect of the works being speedily resumed.

Conservatory.—An immense conservatory, which, when completed, will be the largest in the world, is at present in progress, under the direction of Mr. Decimus Burton, at Chatsworth, the seat of the Duke of Devonshire.

The Duke of Wellington.—The subscription for the "National Memorial" to our illustrious hero, is proceeding with great rapidity, and promises to amount to a sum worthy of the object.

March of Gentility.—In front of a hovel in an obscure lane leading to Skinner's Street, Somers Town, a showy board is displayed with the following announcement in large yellow letters,—"Saint Pancras Establishment for cats' meat and dogs' meat."

Ink.—It is said that a strong decoction of coffee, is the best material for diluting ink that has become too thick for use.

The Tea-Plant.—The tea-plant has, for some years, been cultivated, with great success, in the neighbourhood of Angers, in France.

LITERARY NOVELTIES.

Miss Landon's novel, Ethel Churchill: or, the Two Brides, so long delayed on account of her health, is on the point of publication. The scene is laid in the time of George II.

Thomas Erskine, Esq. Advocate, author of "An Essay on Faith," "The Brazen Serpent," &c. &c., has a new work for the press, which will appear in a few weeks.

In the Press.

The Book of Gems, 1838: the Modern Poets and Artists of Great Britain, edited by S. C. Hall.

LIST OF NEW BOOKS.

Questions on the History of Europe; a Sequel to Miss Mangnall's Historical Questions, by Julian Corner, 12mo. 5*s*.—Words of Wisdom for my Child, 23mo. 2*s*.—A Pilgrimage by Sea and Land, by J. C. Stahlschmidt, translated from the German, by J. Jackson, 12mo. 6*s*.—The New Excitement, for 1838, 18mo. 4*s*. 6*d*.—The Family at Heatherdale, by Mrs. Mackay, 18mo. 3*s*. 6*d*.—A Sketch of English History, by G. M. Gilbert, 12mo. 2*s*.—Conversations on the Human Frame and the Five Senses, square 16mo. 2*s*. 6*d*.—Peter Parley's Wonders of the Earth, Sea, and Sky, square 16mo. 5*s*.—Lectures on Entomology, by J. B. Barton, 12mo. 1*s*.—Gleanings, Historical and Literary, crown 8vo. 10*s*.—The Lyre; Select Extracts from Poets, by A. and C. T. Gauntlett, 2d edition, 12mo. 4*s*.—Warran's (E. A.) Botanical Chart for Schools, canvass and roller, 1*l*. 5*s*.—Rev. W. Thistlewaite's Expository Sermons on the Pentateuch, Vol. I. 12mo. 6*s*.—W. Eagle's Act for Commutation of Tithes, 12mo. 6*s*.—Lord Holt's Judgments on the Privilege of Parliament, royal 8vo. 5*s*.—Mechanics for Practical Men, by A. Jamieson, LL.D. 8vo. 12*s*.—The Life and Reign of William the Fourth, by the Rev. G. N. Wright, 2 vols. 8vo. 18*s*.—The Gods of Homer and Virgil; Mythology for Children, square, 3*s*.—Life and Memoirs of Hannah More, by Miss Julia Corner, 18mo. 2*s*. 6*d*.

METEOROLOGICAL JOURNAL, 1837.

September.	*Thermometer.*	*Barometer.*
Thursday .. 7	From 36 to 65	29·90 to 29·77
Friday 8	.... 43 .. 64	29·80 .. 29·84
Saturday .. 9	.... 42 .. 67	29·81 .. 29·63
Sunday 10	.... 42 .. 69	29·76 .. 29·66
Monday .. 11	.... 43 .. 70	29·76 .. 29·60
Tuesday .. 12	.... 39 .. 61	29·68 .. 29·42
Wednesday 13	.... 39 .. 65	29·25 .. 29·09

Wind S.W.
Except the 7th and 8th, generally clear.
Rain fallen, ·525 of an inch.
Edmonton. CHARLES HENRY ADAMS.

Latitude....51° 37′ 32″ N.
Longitude.. 3 51, W. of Greenwich.

TO CORRESPONDENTS.

In consequence of the extent of our Report of the proceedings of the British Association, at Liverpool, we are compelled to postpone several Reviews and Advertisements.

J. H. declined with thanks.

Q. "The Shadow of the Heart" is published for the composer, at 27 Lombard Street, and may be had of any music-seller.

ADVERTISEMENTS,

Connected with Literature and the Arts.

WILL BE SHORTLY CLOSED.—DIORAMA, REGENT'S PARK.—New Exhibition, representing the Interior of the Basilica of St. Paul, near Rome, before and after its Destruction by Fire; and the Village of Alagna, in Piedmont, destroyed by an Avalanche. Both Pictures are painted by Le Chevalier Bouton.
Open daily, from Ten till Five.

MEDICAL PUPIL.—A Gentleman, in full Practice, in the South of Hants, has a Vacancy for a Pupil. Premium is not the first object of the Advertiser.
For particulars, apply personally, or by letter, to Fluder and Elliott, Chemists, &c., 96 Oxford Street, London; or to Messrs. Randall, Chemists, &c., Southampton.

AN OUT-DOOR APPRENTICE Wanted to the Designing, Engraving on Wood, and Printing in Colours. No Person need apply but those who have a taste for drawing.
Address, Mr. Baxter, 3 Charterhouse Square.

PRINCE NAPOLEON LOUIS.—An authentic and interesting Portrait of the Nephew of the Emperor Napoleon, whose extraordinary attempt at Strasbourg has so recently riveted public attention; engraved by H. B. Ball, from a drawing by Stewart, in his Military Uniform.
Price 5*s.*, is now ready for delivery, at F. Graves, and Co., late Colnaghi and Co., 23 Cockspur Street, Charing Cross.

SALES BY AUCTION.
SOUTHGATES' ROOMS.
Books in Quires, Boards, and Bound.
By MESSRS. SOUTHGATE and SON,
AT THEIR WEEKLY SALE-ROOMS,
22 FLEET STREET,
THIS DAY.
Including Turner's Southern Coast, 2 vols.: Turner's Views in Yorkshire, proofs; Martin's Illustrations to Milton, proofs; Views in London; Walpole's Anecdotes of Painting, by Dallaway, 5 vols; Martin's Colonies, 5 vols; Jeremy Taylor's Works, 3 vols; Walker's Dictionary; Modern Novels; Fifty Reams of Printing Paper, &c. &c.

Books in Quires, Boards, and Bound.
The last Week in September, the entire remaining Stock, Copyright, and Stereotype Plates, together with the Eighty Engravings on Steel, and Sixteen Maps of the Interesting and Intrinsically Valuable Work, entitled the History and Topography of the United States of America, edited by John Howard Hinton, A.M., 2 vols. 4to. (published at 6*l.* 6*s.*, large paper, 10*l.* 10*s.*); also the Entire Remaining Stock of Bouchette's British Dominions in North America, a Topographical and Statistical Description of Upper and Lower Canada, with a Topographical Dictionary of Lower Canada, plates, 3 vols. (published at 4*l.* 4*s.*).
Valuations of every Description of Property for the Payment of the Legacy Duty, &c.

BOOKS IN THE PRESS.
Nearly ready, in 1 vol. 12mo. illustrated,
THE PRISONERS of ABD-EL-KADER;
or, Five Months' Captivity among the Arabs.
By Monsieur A. de FRANCE, Lieut. in the French Navy.
Translated by R. F. PORTER.
Smith, Elder, and Co. London; and W. Grapel, Liverpool.

On the 25th, in 3 vols. post 8vo.
A NEW NOVEL,
By Mr. BULWER,
ERNEST MALTRAVERS.
Saunders and Otley, Conduit Street, Hanover Square.

On Monday, Sept. 18, will be published, 2d edit. in 1 vol. 8vo. price 14*s.*
JOURNAL of a RESIDENCE in NORWAY, during the Years 1834, 1835, and 1836; made with a View to inquire into the Rural and Political Economy of that Country, and the Condition of its Inhabitants.
By SAMUEL LAING, Esq.
"In talent, acquirement, sound thinking, and good writing, Mr. Laing belongs to the same class of travellers as Arthur Young and Alexander Humboldt—every sensible reader will rise from the perusal of his book with the conviction that, next to Humboldt, he is the first of living travellers."—*London and Westminster Review.*
London: Longman, Orme, and Co.

FAIRY TALES, ILLUSTRATED WITH 200 ENGRAVINGS.
On the 1st of October will be published, price 2*s.* 6*d.*
THE CHILD'S FAIRY LIBRARY.
To be completed in Eight alternate Monthly Volumes.
This beautiful publication will comprehend all those well-known and delightful tales which have, for so many ages, inspired the imagination and formed the taste of successive generations of children. The embellishments are from Designs by the celebrated Artists whose unrivalled talents have been employed in the magnificent editions of "Gil Blas," "Don Quixote," &c. now publishing in Paris and London.
London: Joseph Thomas; Tegg and Son; and Simpkin and Marshall.

On the 2d of October will be published, illustrated by Plates,
GUY'S HOSPITAL REPORTS, No. V.
Containing Papers by Dr. Bright, Dr. Addison, Mr. Key, Mr. Cooper, Mr. King, Mr. E. Cock, Mr. Hilton, Mr. A. Taylor.
At the same time, price 12*s.* cloth,
Vol. II. of the Work, being the Vol. for the Year 1837.
S. Highley, 32 Fleet Street, London.

BRITISH and FOREIGN REVIEW, No. X. will be ready for delivery with the Magazines for October 1. Advertisements must be sent to the publishers before the 25th Instant.
*** Nos. I. to IX. are still on sale, price 4*s.* each, or in 4 vols. half russia, 11*s.* 6*d.* each.
James Ridgway and Sons, Piccadilly; and all Booksellers.

13 *Great Marlborough Street.*
MR. COLBURN has just ready for publication, the following New Works:—

I.
Ethel Churchill;
Or, the Two Brides.
A Story of the Reign of George II.
By Miss Landon,
Author of "The Improvvisatrice," &c.

II.
In 2 vols. 8vo. with Portrait,
Life of Sir Edward Coke;
With Memoirs of his Contemporaries.
By C. W. Johnson, Esq. Barrister-at-Law.

III.
In 2 vols. post 8vo.
Stories of Spanish Life.
Edited by Lieut.-Col. Craufurd, Grenadier Guards.

Also, just published,

I.
In 3 vols. post 8vo.
Uncle Horace.
By Mrs. S. C. Hall,
Authoress of "Sketches of Irish Character,"
"The Buccaneer," &c.
"These volumes, whether for talent, feeling, or principle, do Mrs. Hall the highest credit. We congratulate our readers on having to make 'Uncle Horace's' acquaintance."—*Lit. Gazette.*

II.
In 3 vols. post 8vo.
Stokeshill Place;
Or, the Man of Business.
By the Authoress of "Mrs. Armytage;" "Mothers and Daughters," &c.
"These volumes contain some of the most exquisite sketches we have yet seen, even from the pen of Mrs. Gore."—*Examiner.*

SEQUEL TO MANGNALL'S QUESTIONS.
On Monday, September 18, will be published, price 5*s.* bound,
QUESTIONS on the HISTORY of EUROPE: a Sequel to Miss Mangnall's Historical Questions. By JULIA CORNER.
The object of the author is to render the minds of her youthful readers as familiar with the history of the modern nations of Europe as they have been made with that of Greece and Rome by means of Miss Mangnall's Historical Questions.
London: Longman, Orme, Brown, Green, and Longmans.
Of whom may be had, with the last Corrections of the Author,
Miss Mangnall's Historical Questions. 4*s.* 6*d.*
Miss Mangnall's Geography. New edition. 7*s.* 6*d.*

FIRST COMPLETE EDITION, UNIFORM WITH BYRON, SCOTT, CRABBE, COWPER, &c.
On Monday, October 16, will be published, in f.cap 8vo. with a Portrait of the Author by Lane, and a Vignette by Creswick, beautifully engraved by Finden, price 5*s.* in cloth, lettered,
Vol. I. (containing Joan of Arc) of
SOUTHEY'S POETICAL WORKS;
collected by Himself.
This edition, which the author has arranged and revised with the same care as if it were intended for posthumous publication, will be comprised in ten volumes, including many pieces which have either never before been collected, or have hitherto remained unpublished. Preliminary notices will be affixed to the long poems, the whole of the notes retained, and such additional ones incorporated, as the author, since the first publication, has seen occasion to insert. The frontispiece and vignettes will consist of views appropriate to the respective volumes.
London: Longman, Orme, Brown, Green, and Longmans.

BOOKS PUBLISHED THIS DAY.
Price 3*s.* 6*d.*
MEMORIETTA ITALIANA, per le FANCIULLE; o Conversazioni Familiari in Italiano ed in Francese, precedute da spiegazioni, ed altri detiagli importanti a superai per poter ben conversare in Italiano.
Da MARIA EMILIA A. CASSELLA, di Firenze.
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"Hail! ye small sweet courtesies of life, for smooth do ye make the road of it! Like grace and beauty, which beget inclination to love at first sight, 'tis ye who open the door, and let the stranger in."—*Sterne.*
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